Internal Use Only

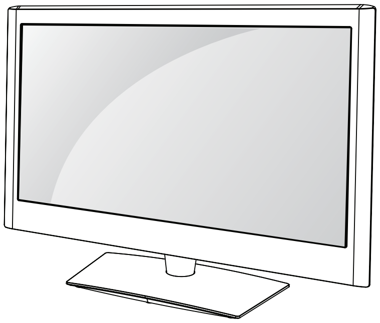
North/Latin America http://aic.lgservice.com
Europe/Africa http://eic.lgservice.com
Asia/Oceania http://biz.lgservice.com

LED LCD TV
SERVICE MANUAL

CHASSIS : LA01T

MODEL : 22LV2500 22LV2500-UA

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



P/NO : MFL66990002 (1103-REV00) Printed in Korea

CONTENTS

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Exploded View.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

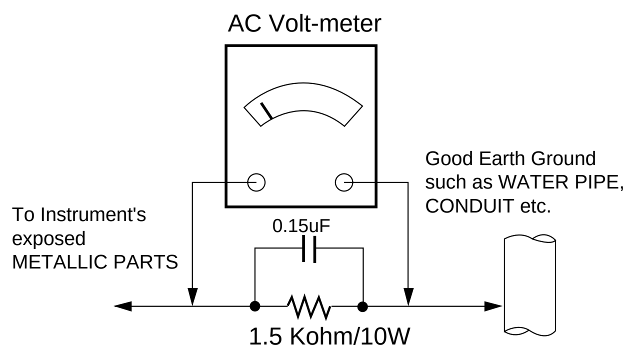
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
      CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.
   Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
8. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500°F to 600°F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500°F to 600°F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      CAUTION: Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
      CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.
   Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application range

This spec sheet is applied LED LCD TV with 22" LA01T chassis.

2. Requirement for Test

Each part is tested as below without special appointment.

1) Temperature: 25 ºC ± 5 ºC
2) Relative Humidity: 65 ± 10 %
3) Power Voltage : Standard input voltage(100-240V~, 50/60Hz)
   * Standard Voltage of each product is marked by models
4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.
5) The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method

1) Performance: LGE TV test method followed
2) Demanded other specification
   - Safety : UL, CSA, IEC specification
   - EMC: FCC, ICES, IEC specification

4. General Specification(TV)

No	Item	Specification		Remark
1	Receivable System	1) ATSC / NTSC-M		
2	Available Channel	1) VHF : 02 ~ 13 2) UHF : 14 ~ 69 3) DTV : 02 ~ 69 4) CATV : 01 ~ 135 5) CADTV : 01 ~ 135		
3	Input Voltage	1) AC 100 - 240V~ 50/60Hz		Mark : 110V, 60Hz
4	Market	North America		
5	Screen Size	22 inch Wide (1366x768)	HD + 60Hz	22LV2500-UA(AUO)
6	Aspect Ratio	16:9		
7	Tuning System	FS		
8	LCD Module	M215HW01-VB	AUO	22LV2500-UA(AUO)
9	Operating Environment	Temp : 0 ~ 40 deg Humidity : ~ 80 %		
10	Storage Environment	Temp : -20 ~ 60 deg Humidity : -85 %		

5. Chrominance & Luminance

No.	Item			Min	Typ	Max	Unit	Remarks
1	Max Luminance (Center 1-point / Full White Pattern)			240	300		cd/m2	22LV2500-UA(AUO)
2	Luminance uniformity							
3	Color coordinate (Default)	RED	X	Typ. -0.03	0.635	Typ. +0.03		22LV2500-UA(AUO)
			Y		0.349			
		GREEN	X		0.332			
			Y		0.619			
		BLUE	X		0.155			
			Y		0.055			
		WHITE	X		0.313			
			Y		0.329			
4	Contrast ratio	Module		700	1000			22LV2500-UA(AUO)
		DCR		800,000:1	1,000,000:1			AUO
5	Color Temperature	Cool		0.283 0.291	0.285 0.293	0.287 0.295	9300K	The W/B Tolerance is ±0.015 for picture quality by DQA
		Medium		0.293 0.303	0.295 0.305	0.297 0.307	8000K	
		Warm		0.311 0.327	0.313 0.329	0.315 0.331	6500K	

6. Component Video Input (Y, CB/PB, CR/PR)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed
1.	720*480	15.73	60	13.5135	SDTV ,DVD 480I
2.	720*480	15.73	59.94	13.5	SDTV ,DVD 480I
3.	720*480	31.50	60	27.027	SDTV 480P
4.	720*480	31.47	59.94	27.0	SDTV 480P
5.	1280*720	45.00	60.00	74.25	HDTV 720P
6.	1280*720	44.96	59.94	74.176	HDTV 720P
7.	1920*1080	33.75	60.00	74.25	HDTV 1080I
8.	1920*1080	33.72	59.94	74.176	HDTV 1080I
9.	1920*1080	67.500	60	148.50	HDTV 1080P
10.	1920*1080	67.432	59.94	148.352	HDTV 1080P
11.	1920*1080	27.000	24.000	74.25	HDTV 1080P
12.	1920*1080	26.97	23.976	74.176	HDTV 1080P
13.	1920*1080	33.75	30.000	74.25	HDTV 1080P
14.	1920*1080	33.71	29.97	740176	HDTV 1080P

7. RGB Input (PC)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed	
	PC					DDC
1.	640*350	31.468	70.09	25.17	EGA	X
2.	720*400	31.469	70.08	28.32	DOS	O
3.	640*480	31.469	59.94	25.17	VESA(VGA)	O
4.	800*600	37.879	60.31	40.00	VESA(SVGA)	O
5.	1024*768	48.363	60.00	65.00	VESA(XGA)	O
6.	1280*768	47.776	59.870	79.5	CVT(WXGA)	X
7.	1360*768	47.712	60.015	85.50	VESA(WXGA)	X

8. HDMI input (PC/DTV)

No	Resolution	H-freq(kHz)	V-freq.(kHz)	Pixel clock	Proposed	
	PC					DDC
1.	640*350	31.468	70.09	25.17	EGA	X
2.	720*400	31.469	70.08	28.32	DOS	O
3.	640*480	31.469	59.94	25.17	VESA(VGA)	X
4.	800*600	37.879	60.31	40.00	VESA(SVGA)	O
5.	1024*768	48.363	60.00	65.00	VESA(XGA)	O
6.	1280*768	47.776	59.870	79.5	CVT(WXGA)	X
7.	1360*768	47.712	60.015	85.50	VESA (WXGA)	O
	DTV					
1	720*480	31.47	60	27.027	SDTV 480P	O
2	720*480	31.47	59.94	27.00	SDTV 480P	O
3	1280*720	45.00	60.00	74.25	HDTV 720P	O
4	1280*720	44.96	59.94	74.176	HDTV 720P	O
5	1920*1080	33.75	60.00	74.25	HDTV 1080I	O
6	1920*1080	33.72	59.94	74.176	HDTV 1080I	O
7	1920*1080	67.500	60	148.50	HDTV 1080P	O
8	1920*1080	67.432	59.939	148.352	HDTV 1080P	O
9	1920*1080	27.000	24.000	74.25	HDTV 1080P	O
10	1920*1080	26.97	23.976	74.176	HDTV 1080P	O
11	1920*1080	33.75	30.000	74.25	HDTV 1080P	O
12	1920*1080	33.71	29.97	74.176	HDTV 1080P	O

ADJUSTMENT INSTRUCTION

1. Application range

This spec. sheet applies to LA01T Chassis applied LCD TV all models manufactured in TV factory.

2. Specification

2.1 Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
2.2 Adjustment must be done in the correct order.
2.3 The adjustment must be performed in the circumstance of 25±5°C of temperature and 65±10% of relative humidity
2.4 The input voltage of the receiver must keep 100~240V~, 50/60Hz.
2.5 At first Worker must turn on the SET by using Power Only key.
2.5 The receiver must be operated for about 5 minutes prior to the adjustment when module is in the circumstance of over 15.

In case of keeping module is in the circumstance of 0°C, it should be placed in the circumstance of above 15°C for 2 hours

In case of keeping module is in the circumstance of below -20°C, it should be placed in the circumstance of above 15°C for 3 hours.

• Caution
When a still image is displayed for 20 minutes or longer (especially where W/B scale is strong. Digital pattern 13ch and/or Cross hatch pattern 09ch), there can some afterimage in the black level area.

3. Adjustment items

3.1 Board Level Adjustment

(1) Adjust 480i Comp1(ADC)
(2) EDID/DDC download

• Remark
- Above adjustment items can be also performed in Final Assembly if needed. Adjustment items in both PCBA and final assembly stages can be checked by using the INSTART Menu 1.ADJUST CHECK.

3.2 Final Assembly adjustment

(1) White Balance adjustment
(2) RS-232C functionality check
(3) Factory Option setting per destination
(4) Shipment mode setting (IN-STOP)

3.3 Etc

(1) Ship-out mode
(2) Service Option Default
(3) USB Download(S/W Update, Option, Service only)
(4) ISP Download (Optional)

4. Board Level Adjustment

4.1. ADC Adjustment

4.1.1. Overview
• ADC adjustment is needed to find the optimum black level and gain in Analog-to-Digital device and to compensate RGB deviation.

4.1.2. Equipment & Condition
1) Jig (RS-232C protocol)
• Required equipment : Adjustment R/C
*Enter Service Mode by pushing "ADJ" key,
*Enter Internal ADC mode by pushing "G" key at "6. ADC Calibration"

4.1.3. Adjustment
4.1.3.1 Adjustment method
• Using RS-232, adjust items listed in 3.1 in the other shown in "4.1.3.3"

4.1.3.2 Adj. protocol

Protocol	Command	SetACK
Enter adj. mode	aa 00 00	a 00 OK00x
Source change	xb 00 40 xb 00 60	b 00 OK40x (Adjust 480i /1080p Comp1) b 00 OK60x (Adjust 1920*1080 RGB)
Begin adj.	ad 00 10	
Return adj. result		OKx (Case of Success) NGx (Case of Fail)
Read adj. data	(main) ad 00 20 (sub) ad 00 21	(main) 000000000000000000000000007c007b006dx (Sub) 000000070000000000000000007c00830077x
Confirm adj.	ad 00 99	NG 03 00x (Fail) NG 03 01x (Fail) NG 03 02x (Fail) OK 03 03x (Success)
End adj.	aa 00 90	a 00 OK90x

Ref.) ADC Adj. RS232C Protocol_Ver1.0

4.1.3.3. Adj. order
• aa 00 00 [Enter ADC adj. mode]
• xb 00 40 [Change input source to Component1(1080i)]
• ad 00 10 [Adjust 480i Comp1]
• xb 00 60 [Change input source to RGB(1024*768)]
• ad 00 10 [Adjust 1024*768 RGB]
• ad 00 90 End adj.

Ref) ADC adj. RS232C Protocol_Ver1.0

4.2. EDID/DDC Download

4.2.1 Overview

- It is a VESA regulation. A PC or a MNT will display an optimal resolution through information sharing without any necessity of user input. It is a realization of “Plug and Play”.

4.2.2 Equipment

- Since embedded EDID data is used, EDID download JIG, HDMI cable and D-sub cable are not need.
- Adjust remocon.

4.2.3 Download method

1) Press Adj. key on the Adj. R/C,
2) Select EDID D/L menu.
3) By pressing Enter key, EDID download will begin
4) If Download is successful, OK is display, but If Download is failure, NG is displayed.
5) If Download is failure, Re-try downloads.

* Caution) When EDID Download, must remove RGB/HDMI Cable.

4.2.4 EDID DATA

1) North America

HDMI1-EDID (C/S : 03CC)

EDID Block 0

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
50	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	39
60	3F	1F	52	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	03

Block1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	1C	F1	47	10	22	20	05	84	03	02	23	09	07	07
10	67	03	0C	00	10	00	B8	2D	E3	05	03	01	02	3A	80	18
20	71	38	2D	40	58	2C	04	05	A0	5A	00	00	00	1E	01	1D
30	80	18	71	1C	16	20	58	2C	25	00	A0	5A	00	00	00	9E
40	01	1D	00	72	51	D0	1E	20	6E	28	55	00	A0	5A	00	00
50	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	A0	5A
60	00	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00
70	A0	5A	00	00	00	1A	00	00	00	00	00	00	00	00	00	CC

HDMI2-EDID (C/S : 03BC)

Block0

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
50	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	39
60	3F	1F	52	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	03

Block1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	1C	F1	47	10	22	20	05	84	03	02	23	09	07	07
10	67	03	0C	00	20	00	B8	2D	E3	05	03	01	02	3A	80	18
20	71	38	2D	40	58	2C	04	05	A0	5A	00	00	00	1E	01	1D
30	80	18	71	1C	16	20	58	2C	25	00	A0	5A	00	00	00	9E
40	01	1D	00	72	51	D0	1E	20	6E	28	55	00	A0	5A	00	00
50	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	A0	5A
60	00	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00
70	A0	5A	00	00	00	1A	00	00	00	00	00	00	00	00	00	BC

HDMI3-EDID (C/S : 03AC)

Block0

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	15	01	03	80	10	09	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
50	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	39
60	3F	1F	52	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	03

Block1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	1C	F1	47	10	22	20	05	84	03	02	23	09	07	07
10	67	03	0C	00	30	00	B8	2D	E3	05	03	01	02	3A	80	18
20	71	38	2D	40	58	2C	04	05	A0	5A	00	00	00	1E	01	1D
30	80	18	71	1C	16	20	58	2C	25	00	A0	5A	00	00	00	9E
40	01	1D	00	72	51	D0	1E	20	6E	28	55	00	A0	5A	00	00
50	00	1E	8C	0A	D0	8A	20	E0	2D	10	10	3E	96	00	A0	5A
60	00	00	00	18	26	36	80	A0	70	38	1F	40	30	20	25	00
70	A0	5A	00	00	00	1A	00	00	00	00	00	00	00	00	00	AC

RGB-EDID (C/S : 1C)

Block0

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	01	15	01	03	68	10	09	78	0A	EE	91	A3	54	4C	99	26
20	0F	50	54	A1	08	00	81	80	61	40	45	40	31	40	01	01
30	01	01	01	01	01	01	02	3A	80	18	71	38	2D	40	58	2C
40	45	00	A0	5A	00	00	00	1E	01	1D	00	72	51	D0	1E	20
50	6E	28	55	00	A0	5A	00	00	00	1E	00	00	00	FD	00	3A
60	3E	1E	53	10	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	1C

5. Final Assembly Adjustment

5.1. White Balance Adjustment

5.1.1. Overview

5.1.1.1. W/B adj. Objective & How-it-works

(1) Objective: To reduce each Panel's W/B deviation

(2) How-it-works: When R/G/B gain in the OSD is at 192, it means the panel is at its Full Dynamic Range. In order to prevent saturation of Full Dynamic range and data, one of R/G/B is fixed at 192, and the other two is lowered to find the desired value.

(3) Adj. condition: normal temperature

1) Surrounding Temperature: 25±5°C

2) Warm-up time: About 5 Min

3) Surrounding Humidity: 20% ~ 80%

5.1.2. Equipment

(1) Color Analyzer: CA-210 (NCG: CH 9 / WCG: CH12 / LED: CH14)

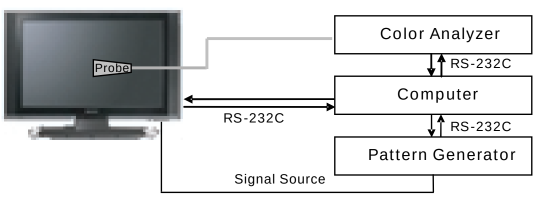
(2) Adj. Computer (During auto adj., RS-232C protocol is needed)

(3) Adjust Remocon

(4) Video Signal Generator MSPG-925F 720p/204-Gray (Model: 217, Pattern: 49)

• Color Analyzer Matrix should be calibrated using CS-1000

5.1.3. Equipment connection



Connection Diagram of Automatic Adjustment

5.1.4. Adjustment Command (Protocol)

(1) RS-232C Command used during auto-adj.

RS-232C COMMAND [CMD	ID	DATA]	Explanation
Wb	00	00	Begin White Balance adj.
Wb	00	ff	End White Balance adj. (internal pattern disappears)

Ex) wb 00 00 -> Begin white balance auto-adj.
wb 00 10 -> Gain adj.
ja 00 ff -> Adj. data
jb 00 c0
...
...
wb 00 1f -> Gain adj. complete
*(wb 00 20(start), wb 00 2f(end)) -> Off-set adj.
wb 00 ff ->End white balance auto adj.

(2) Adj. Map

Applied Model :
32/37/42/47LK450-UB, 32/42/47LK450-NA, 32/42/47LK451-NB, 32/42/47LK452-NC,32LK330-UB, 32/42LK430-UA, 42/47/55LK520-UA, 32LK330-NB, 42LK430-NA, 42/47/55LK530-NA

Adj.	item	Command (lower case ASCII)		Data Range (Hex.)		Default (Decimal)
		CMD1	CMD2	MIN	MAX	
Cool	R Gain	j	g	00	C0	172
	G Gain	j	h	00	C0	172
	B Gain	j	i	00	C0	192
	R Cut					64
	G Cut					64
	B Cut					64
Medium	R Gain	j	a	00	C0	192
	G Gain	j	b	00	C0	192
	B Gain	j	c	00	C0	192
	R Cut					64
	G Cut					64
	B Cut					64
Warm	R Gain	j	d	00	C0	192
	G Gain	j	e	00	C0	192
	B Gain	j	f	00	C0	172
	R Cut					64
	G Cut					64
	B Cut					64

5.1.5. Adjustment method

5.1.5.1 Auto WB calibration

1) Set TV in adj. mode using POWER ONLY (P-ONLY) key

2) Zero calibrate probe then place it on the center of the Display

3) Connect Cable(RS-232C)

4) Select mode in adj. Program and begin adj.

5) When adj. is complete (OK Sing), check adj. status pre mode (Cool, Medium, Warm)

6) Remove probe and RS-232C cable to complete adj.

• W/B Adj. must begin as start command "wb 00 00" , and finish as end command "wb 00 ff", and Adj. offset if need

5.1.5.2 Manual adj. method

1) Set TV in Adj. mode using POWER ON

2) Zero Calibrate the probe of Color Analyzer, then place it on the center of LCD module within 10cm of the surface..

3) Press ADJ key -> EZ adjust using adj. R/C 6. White-Balance then press the cursor to the right (KEYG). (When KEY(G) is pressed 204 Gray(80IRE) internal pattern will be displayed)

4) One of R Gain / G Gain / B Gain should be fixed at 192, and the rest will be lowered to meet the desired value.

5) Adj. is performed in COOL, MEDIUM, WARM 3 modes of color temperature.

• If internal pattern is not available, use RF input. In EZ Adj. menu 6.White Balance, you can select one of 2 Test-pattern: ON, OFF. Default is inner(ON). By selecting OFF, you can adjust using RF signal in 204 Gray pattern.

• Adj. condition and cautionary items
1) Lighting condition in surrounding area
Surrounding lighting should be lower 10 lux. Try to isolate adj. area into dark surrounding.
2) Probe location : Color Analyzer (CA-210) probe should be within 10cm and perpendicular of the module surface (80°~ 100°)
3) Aging time
- After Aging Start, Keep the Power ON status during 5 Minutes.
- In case of LCD, Back-light on should be checked using no signal or Full-white pattern.

5.1.6 Reference (White Balance Adj. coordinate and color temperature)
(1) Luminance: 204 Gray, 80IRE
(2) Standard color coordinate and temperature using CS-1000 (over 26 inch)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269	0.273	13000K	0.0000
MEDIUM	0.285	0.293	9300K	0.0000
WARM	0.313	0.329	6500K	0.0000

• Standard color coordinate and temperature using CA-210(CH 9)

Mode	Color Coordination		Temp	ΔUV
	x	y		
COOL	0.269±0.002	0.273±0.002	13000K	0.0000
MEDIUM	0.285±0.002	0.293±0.002	9300K	0.0000
WARM	0.313+0.002	0.329±0.002	6500K	0.0000

5.2 HDCP (High-Bandwidth Digital Contents Protection) SETTING

5.3 Option selection per country

5.3.1 Overview
• Option selection is only done for models in Non-USA North America due to rating
• Applied model: LA01U Chassis applied None USA model(CANADA, MEXICO)

5.3.2 Method
(1) Press ADJ key on the Adj. R/C, and then select Country Group Menu
(2) Depending on destination, select KR or US, then on the lower Country option, select US, CA, MX. Selection is done using +, - KEY

5.4 Tool Option selection

• Method: Press Adj. key on the Adj. R/C, then select Tool option.

Model	Tool1	Tool2	Tool3	Tool4	Tool5	Menu
26LK330-UB	13896	18966	51209	2328	290	AUO

5.5 Ship-out mode check (In-stop)

• After final inspection, press In-Stop key of the Adj. R/C and check that the unit goes to Stand-by mode.

6. GND and Hi-pot Test

6.1. Method

6.1.1. GND & HI-POT auto-check preparation

(1) Check the POWER CABLE and SIGNAL CABE insertion condition

6.1.2. GND & HI-POT auto-check

(1) Pallet moves in the station. (POWER CORD / AV CORD is tightly inserted)
(2) Connect the AV JACK Tester.
(3) Controller (GWS103-4) on.
(4) GND Test (Auto)
- If Test is failed, Buzzer operates.
- If Test is passed, execute next process (Hi-pot test). (Remove A/V CORD from A/V JACK BOX)

(5) HI-POT test (Auto)
- If Test is failed, Buzzer operates.
- If Test is passed, GOOD Lamp on and move to next process automatically.

6.2. Checkpoint

- TEST voltage
  - GND: 1.5KV/min at 100mA
  - SIGNAL: 3KV/min at 100mA
- TEST time: 1 second
- TEST POINT
  - GND TEST = POWER CORD GND & SIGNAL CABLE METAL GND
  - Internal Pressure TEST = POWER CORD GND & LIVE & NEUTRAL
- LEAKAGE CURRENT: At 0.5mArms

7. EYE-Q Check

Step 1) Turn on the TV.
Step 2) Press EYE button in adjust remote control.
Step 3) Stay 6 seconds with Eye Q sensor hidden located on the front of the set.
Step 4) Check the “Sensor Data” on the screen and check whether the value is lower thanafter 6 seconds, the value does not go below 10, Eye Q sensor is not working properly. Then, change the sensor.
Step 5) Remove hand from the Eye Q II sensor and stay for 6 seconds.
Step 6) Check whether the “Back Light (xxx)” value has risen on the screen. If after 6 seconds and the value still does not go high, the eye Q II sensor is not working properly. Replace the sensor.


<Step1>


<Step2>


<Step3>


<Step4>

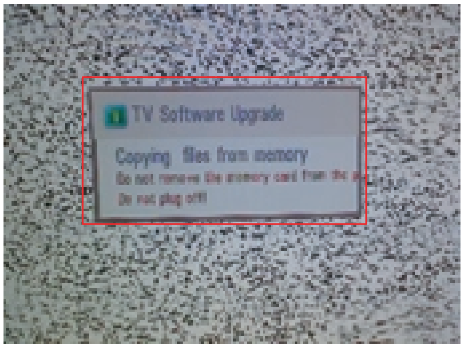

<Step5>

8. USB S/W Download (Option, Service only)

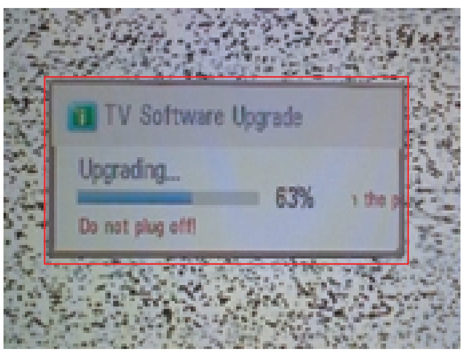
1. Put the USB Stick to the USB socket
2. Automatically detecting update file in USB Stick

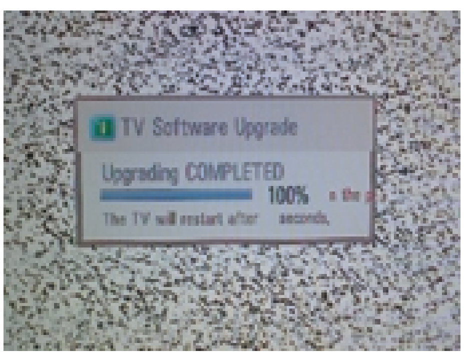
- If your downloaded program version in USB Stick is Low, it didn't work. But your downloaded version is High, USB data is automatically detecting

3. Show the message "Copying files from memory"



4. Updating is starting.





5. Updating Completed, The TV will restart automatically
6. If your TV is turned on, check your updated version and Tool option. (Explain the Tool option, next stage)

* If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. if all channel data is cleared, you didn't have a DTV/ATV test on production line.

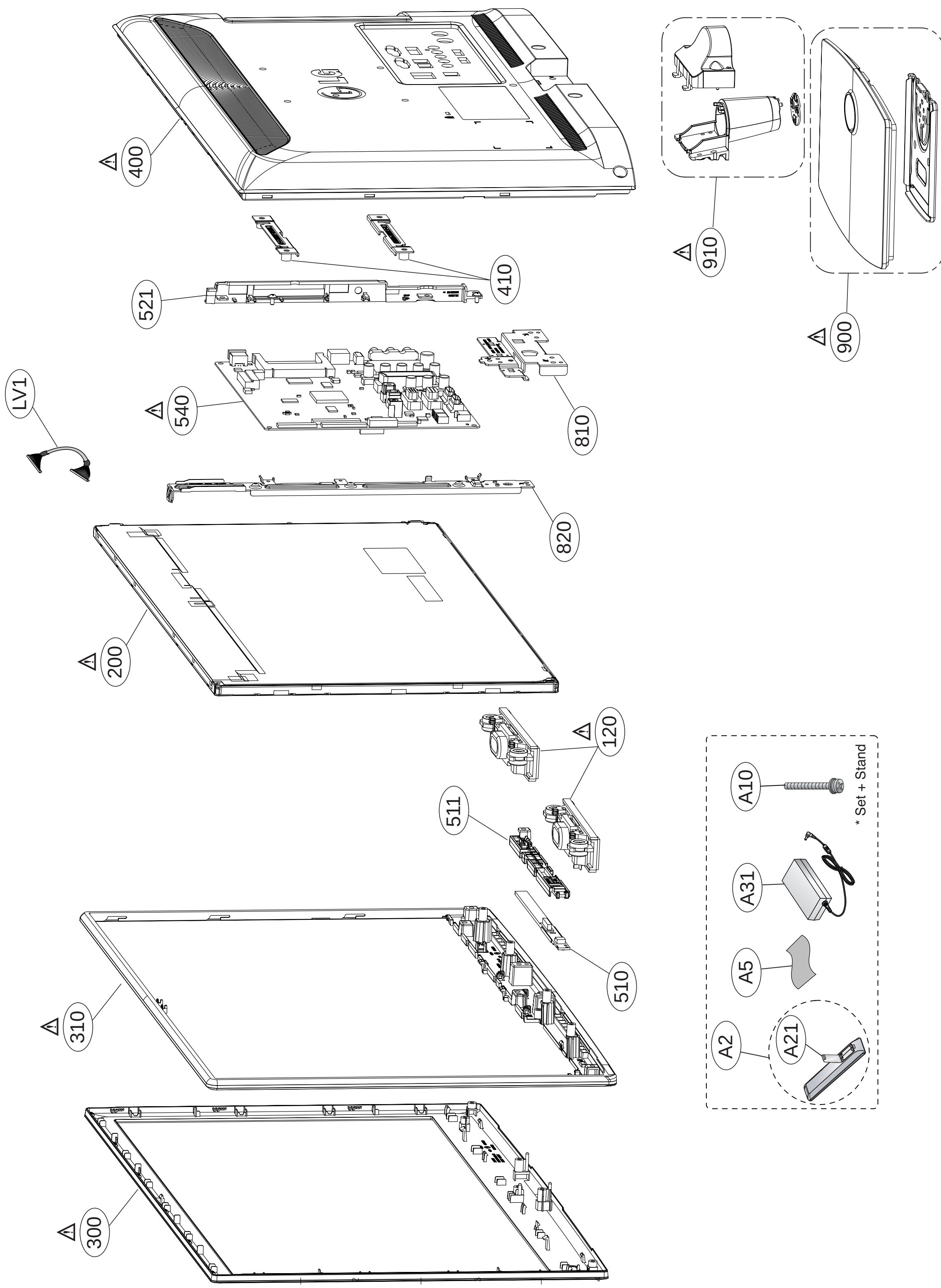
*** After downloading, have to adjust TOOL OPTION again.**

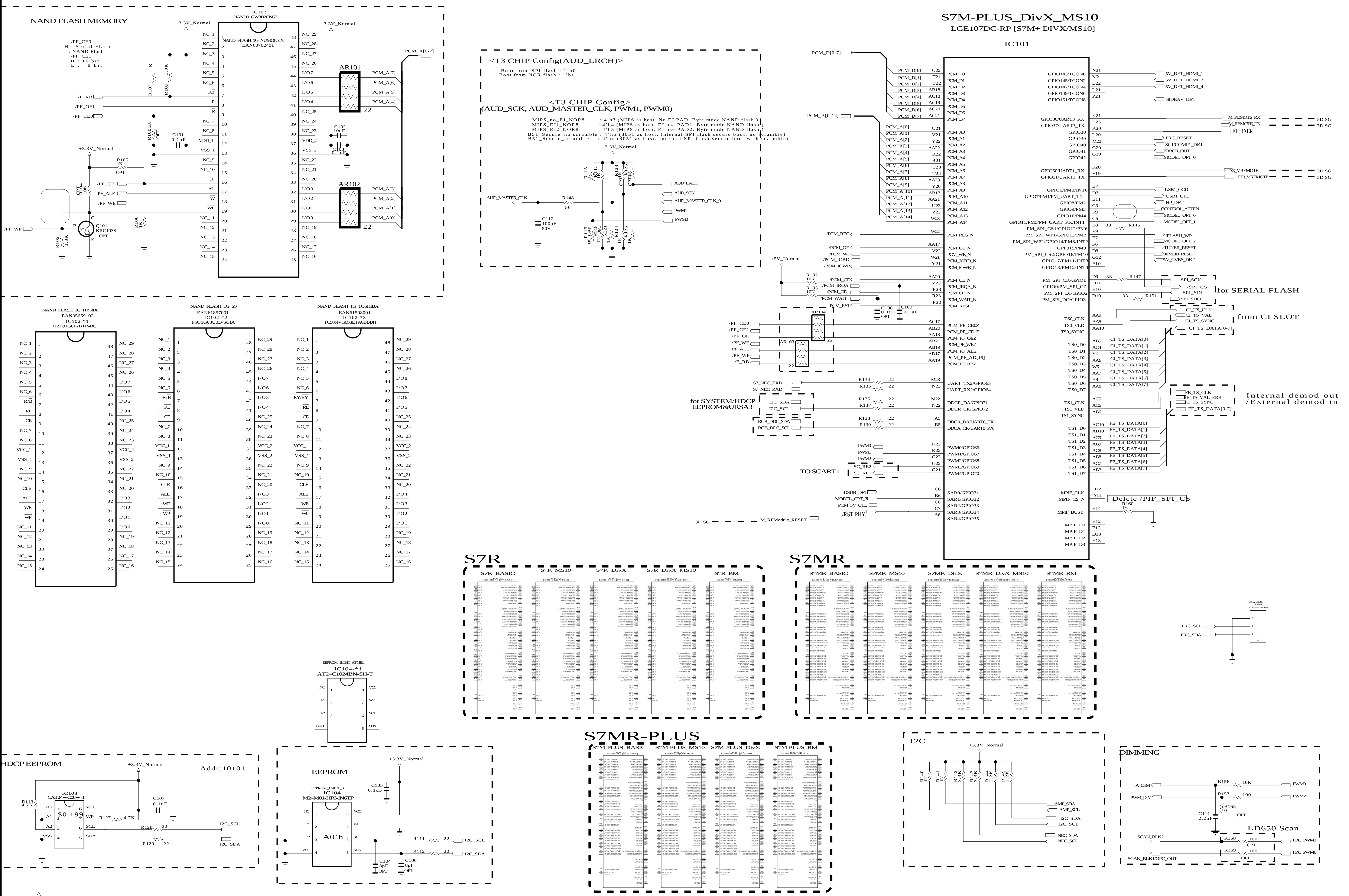
1. Push "IN-START" key in service remote controller.
2. Select "Tool Option 1" and Push "OK" button.
3. Punch in the number. (Each model has their number.)

EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.



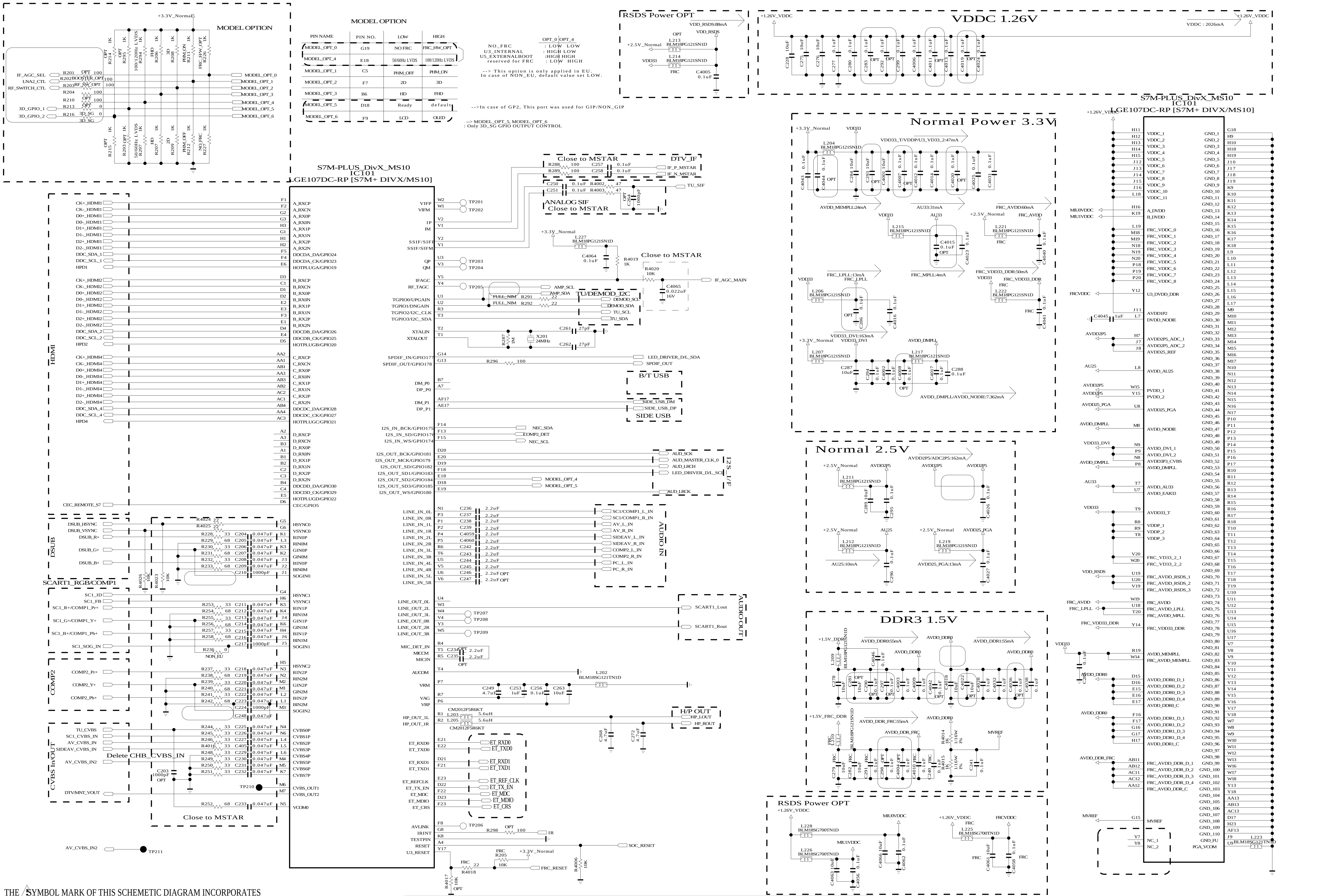


THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP3_Saturn7M	DATE	Ver. 0.1
BLOCK	FLASH/EEPROM/GPIO	SHEET	1

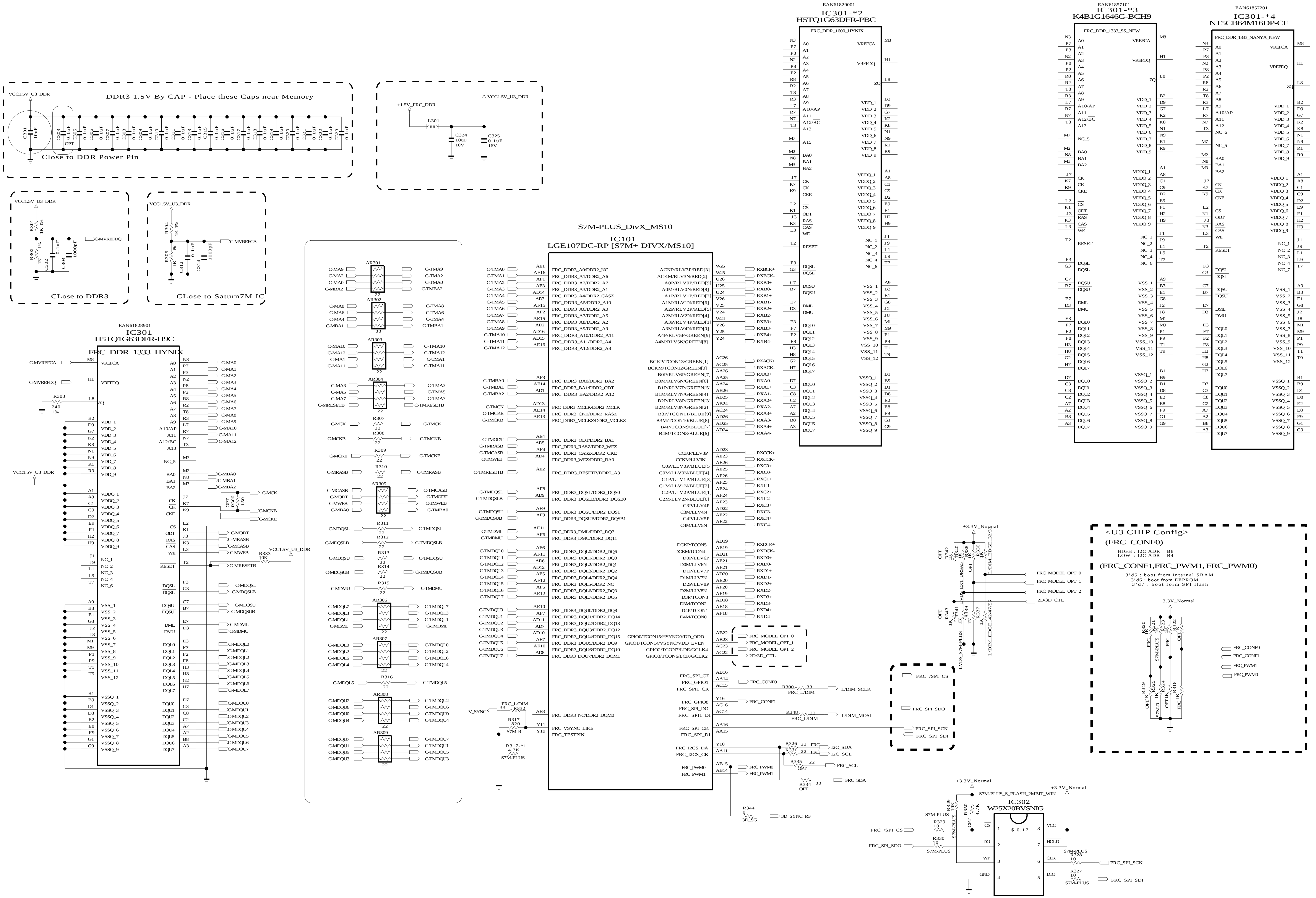


THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	MAIN2, HW OPT	SHEET	2



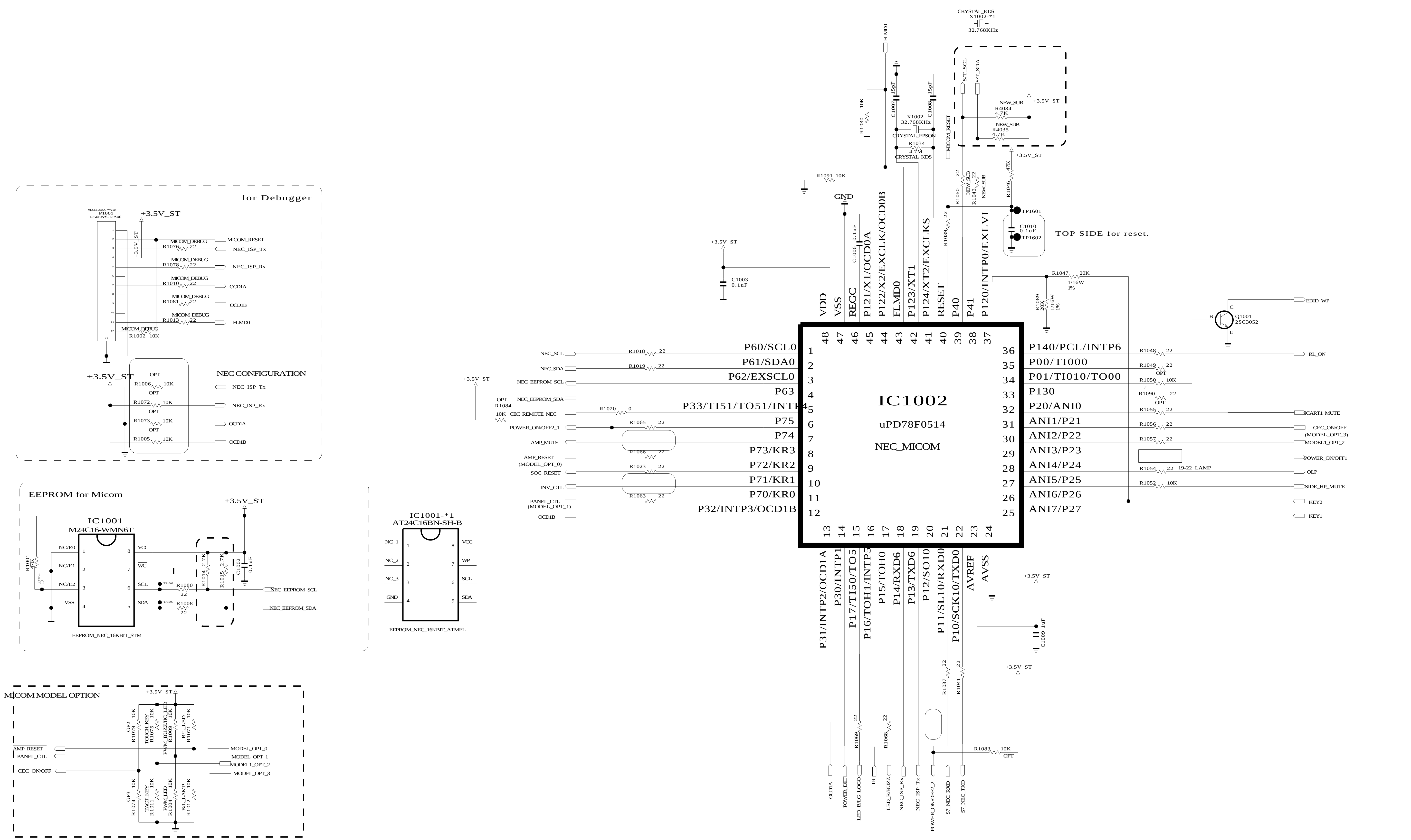
THE ⚠SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	FRC_DDR	SHEET	3



2011Y,GP2R, 101125 Update

MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	8	B/L_LED	B/L_LAMP
MODEL_OPT_1	11	PWM_BUZZ/IIC_LED	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	GP2	GP3

PWM_BUZZ/IIC_LED :Using IIC for LED Breathing & PWM Buzz
PWM_LED : Using PWM Signal for LED Lighting

MODEL_OPT_0	MODEL_OPT_1	MODEL_OPT_2	MODEL_OPT_3	Description
LOW	LOW	LOW	LOW	LK330/LK430 for KR/US 10Y EYE-Q Sensor KEY & PWM LED & No Buzz & No LED Blink
LOW	LOW	LOW	HIGH	LK330/LK430/LK530 KEY & PWM LED & No Buzz & No LED Blink
LOW : LED HIGH : LAMP	HIGH	HIGH	LOW	LV25/LV35/LV45/LW45/LV55/LK45/LK55 S/T & IIC LED & NO BUZZ & LED Blink
	HIGH	LOW	LOW	TBD IIC LED(09Y IIC Protocol) & No BUZZ
	Low	HIGH	LOW	TBD S/T & IIC LED & No Buzz & LED Blink

2010Y,GP2

MODEL OPTION

PIN NAME	PIN NO.	HIGH	LOW
MODEL_OPT_0	8	B/L_LED	B/L_LAMP
MODEL_OPT_1	11	PWM_BUZZ/IIC_LED	PWM_LED
MODEL_OPT_2	30	TOUCH_KEY	TACT_KEY
MODEL_OPT_3	31	GPIO_LED	NON_GPIO_LED

PWM_BUZZ/IIC_LED : For model that use LED Lighting used IIC
PWM_LED : For model that use LED Lighting used PWM Signal

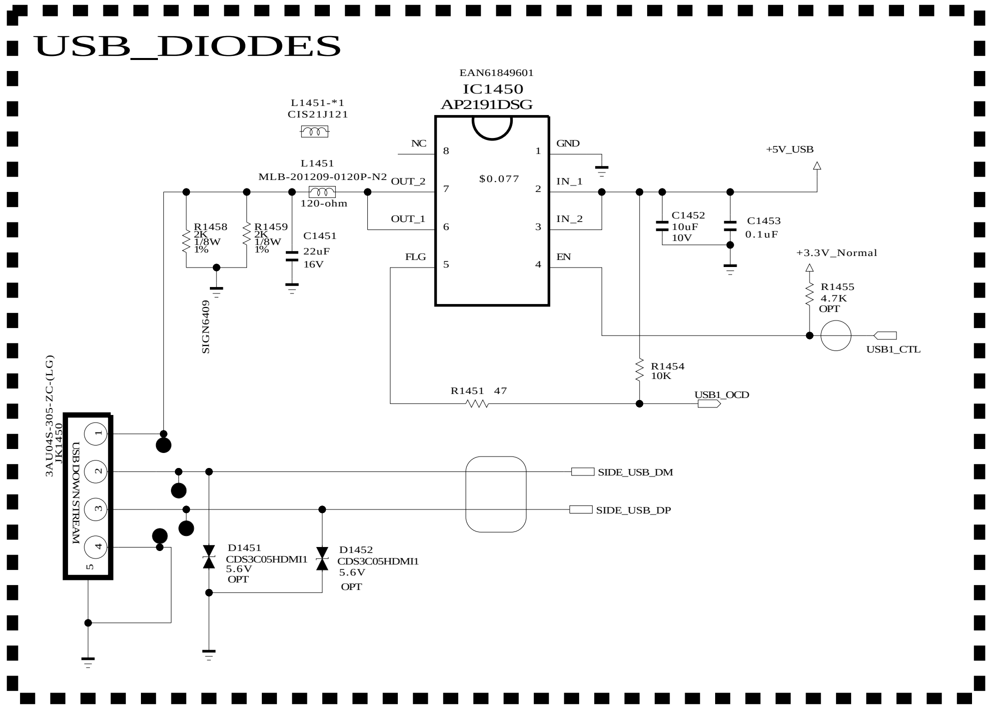
MODEL_OPT_0	MODEL_OPT_1	MODEL_OPT_2	MODEL_OPT_3	
LOW	LOW	LOW	LOW	LD350/450/550 PWM LED & No Buzz & No LED Blink
HIGH	LOW	HIGH	LOW	19/22/26LE5300/5300 IIC LED & PWM IIC BUZZ
HIGH	HIGH	HIGH	LOW	32/37/42/47/55LE5300 IIC LED & PWM BUZZ
LOW	HIGH	LOW	LOW	LD420 IIC LED(09Y IIC Protocol) & No BUZZ
HIGH	LOW	LOW	HIGH	LE7300 GPIO LED & NO BUZZ

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101125
BLOCK	MICOM Rev.4	SHEET	5 /



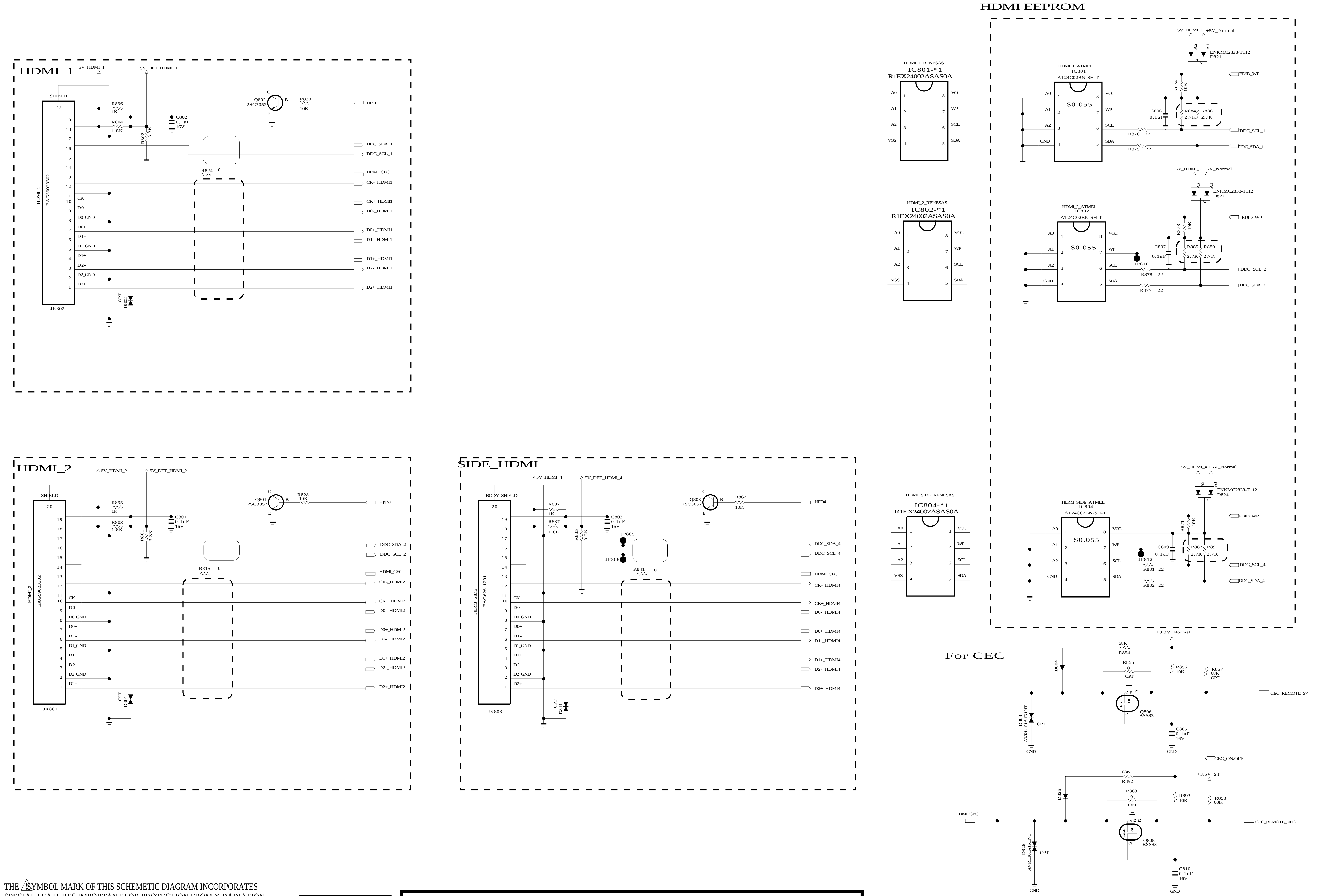
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	USB_OCP_DIODE	SHEET	7 /



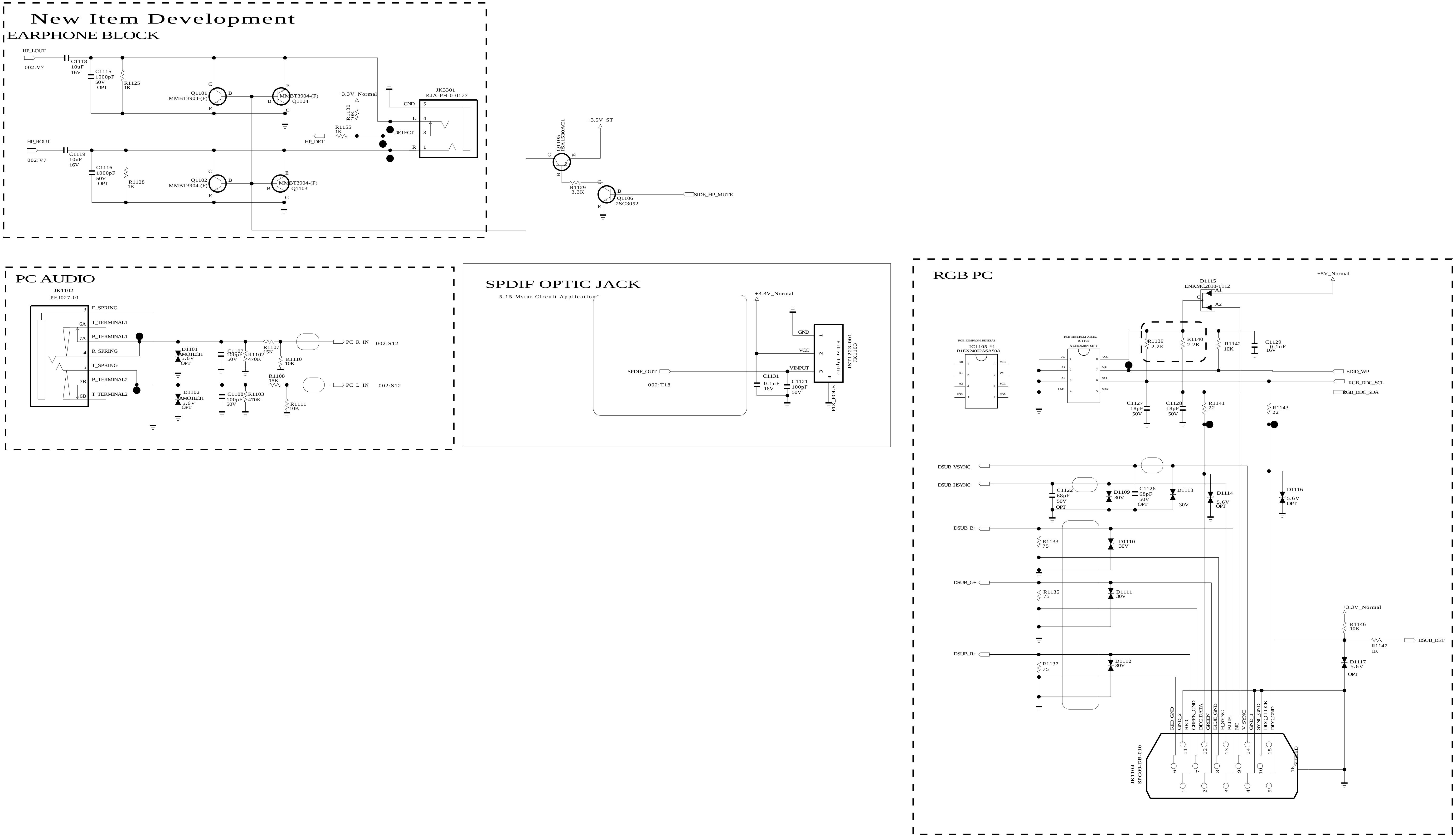
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	HDMI	SHEET	8

RGB/SPDIF/PC/HP



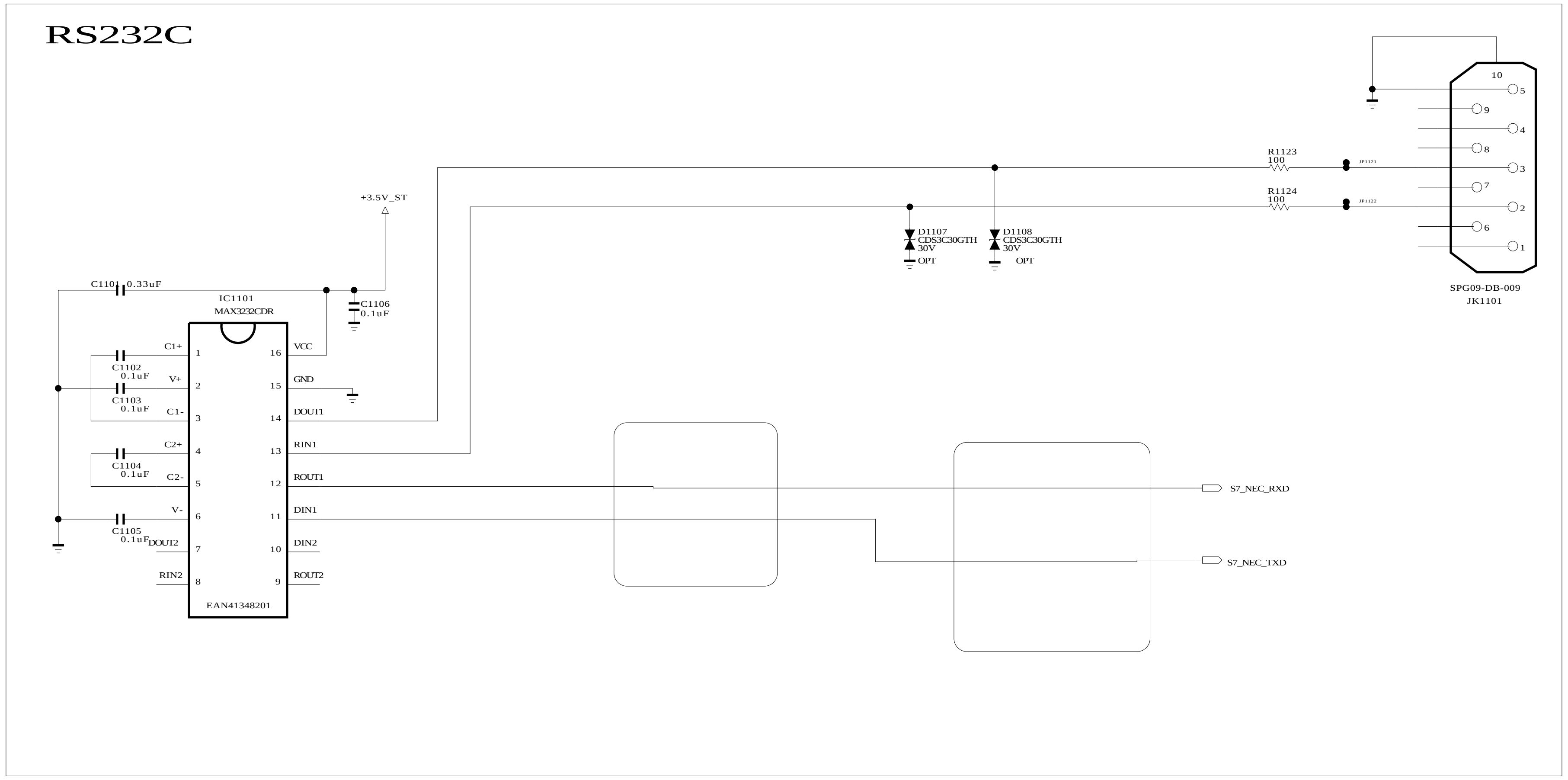
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	RGB/SPDIF/HP	SHEET	9 /

RS232C



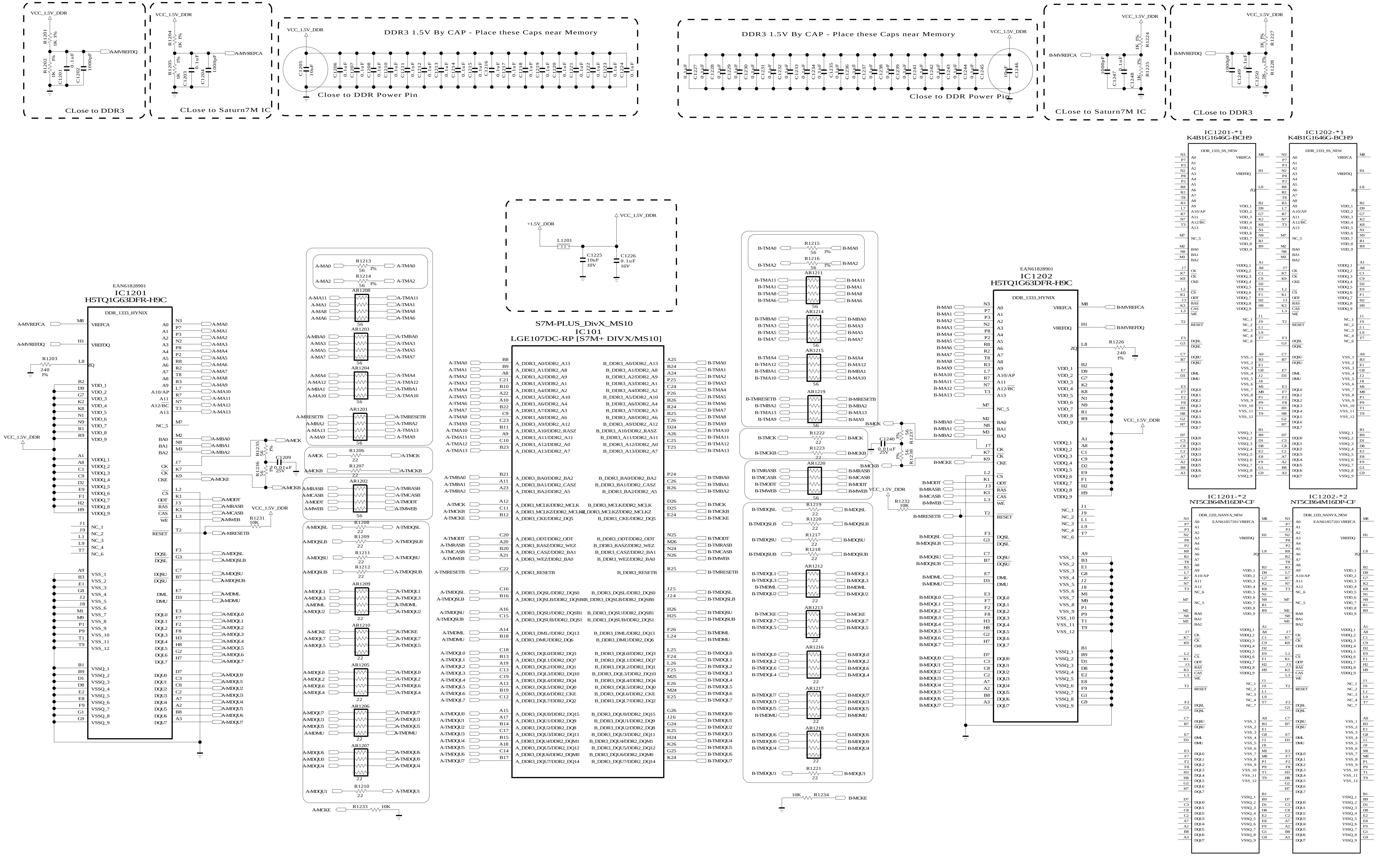
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LG Electronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	RS232C_9PIN	SHEET	10 /

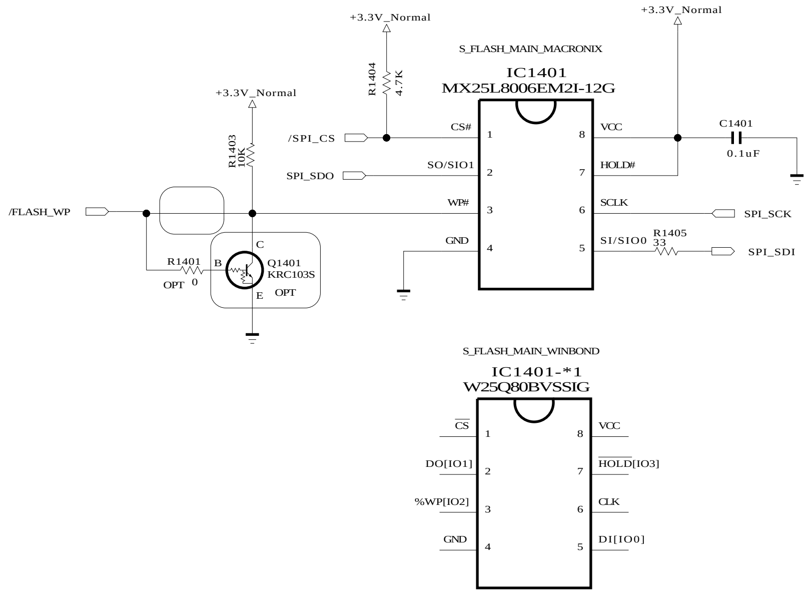


THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	DDR_256	SHEET	12 /



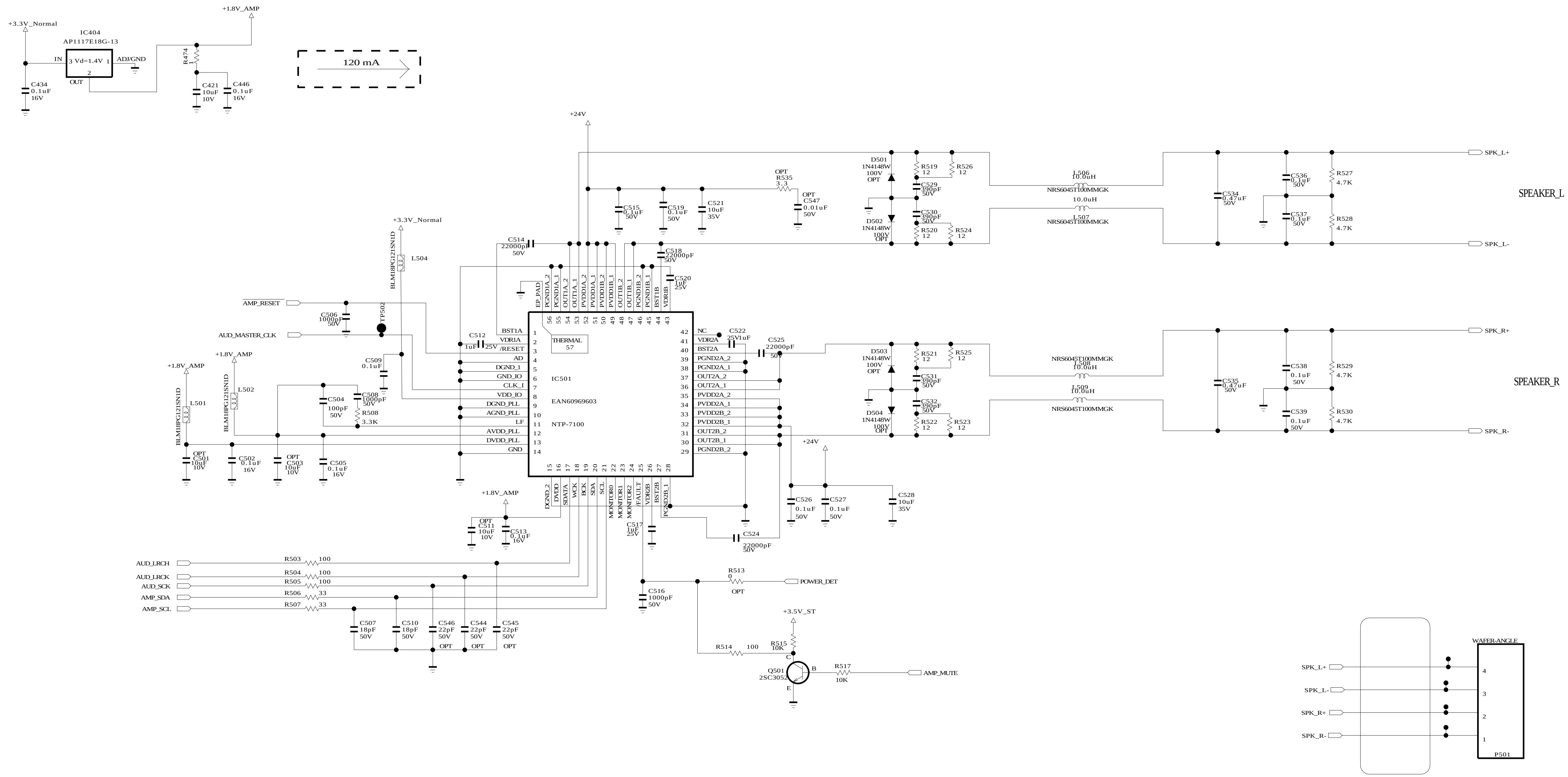
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

LG Electronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	FLASH 1MB	SHEET	13 /

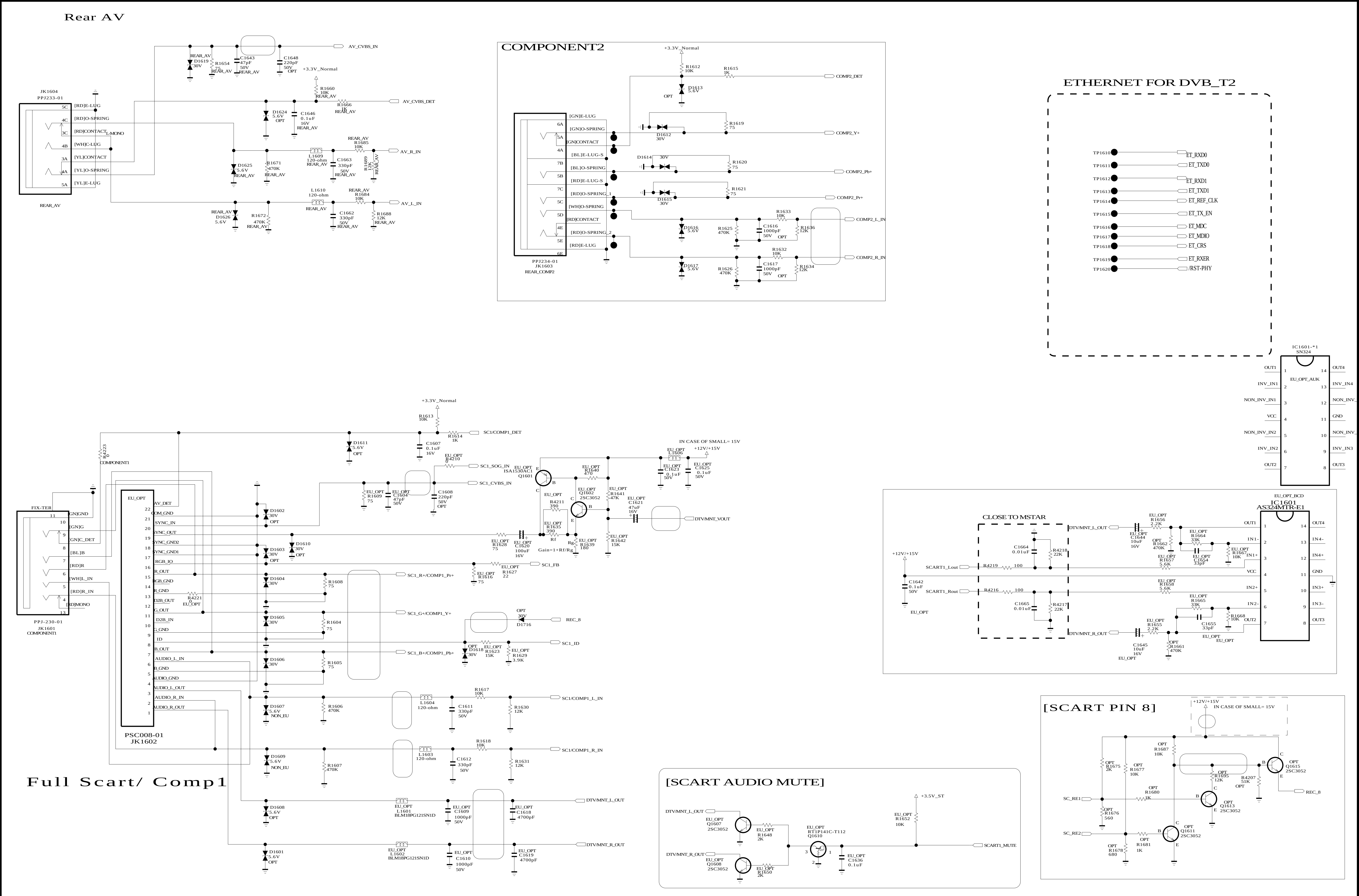


THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	AMP_NTP	SHEET	16 /



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

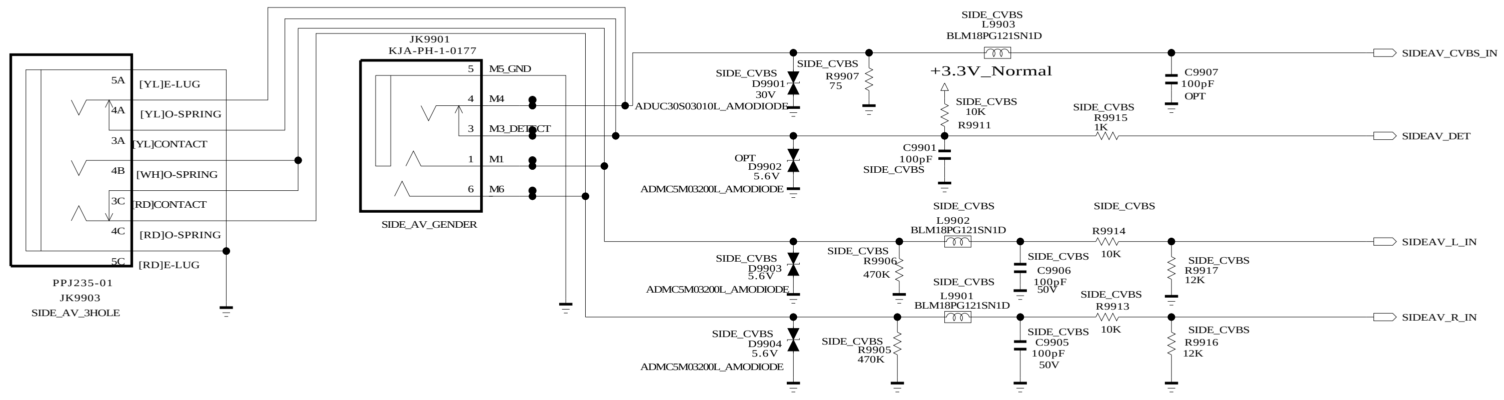
SECRET

LG Electronics

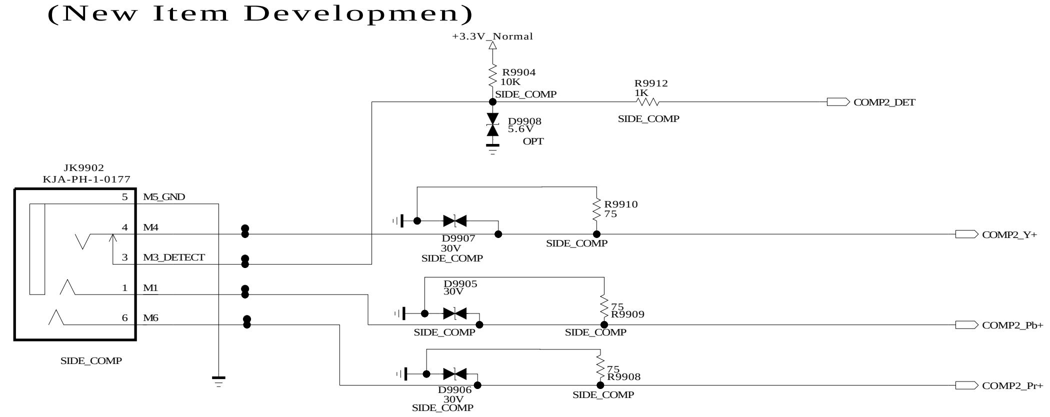
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	REAR JACK	SHEET	17 /

SIDE CVBS PHONE JACK
(New Item Development)



SIDE COMPONENT PHONE JACK
(New Item Developmen)



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

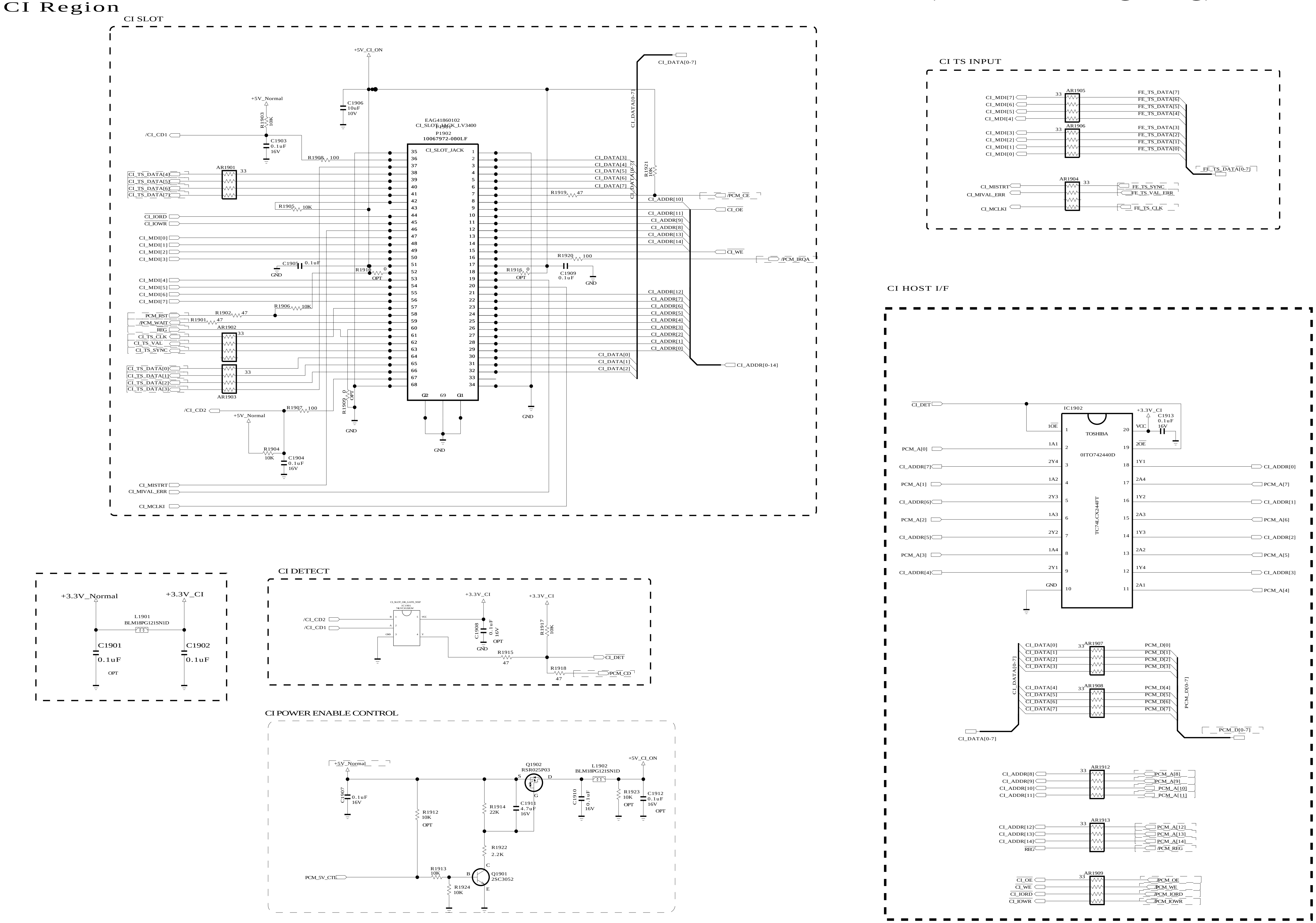
SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	SIDE_JACK	SHEET	18 /

* Option name of this page : CI_SLOT
(because of Hong Kong)

CI Region



THE ⚠SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠SYMBOL MARK OF THE SCHEMETIC.

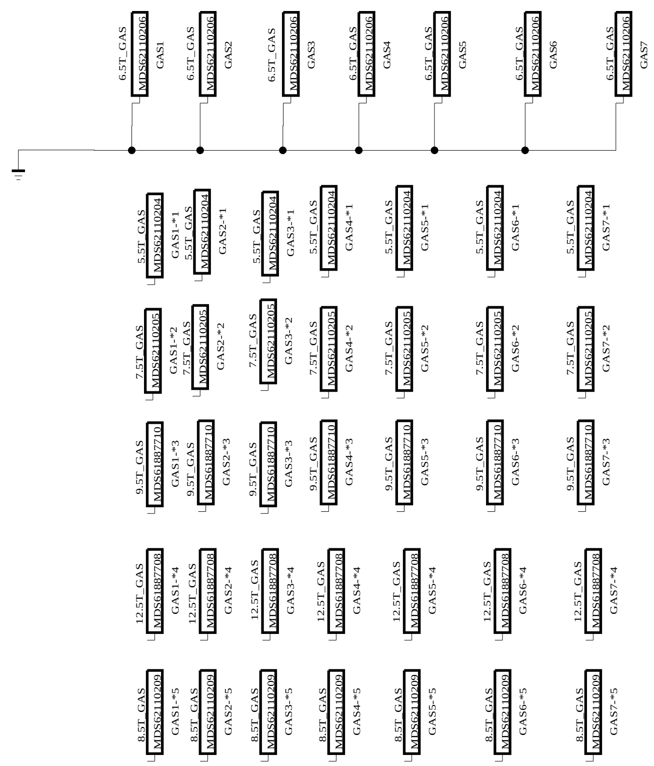
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	PCMCI	SHEET	20 /

SMD GASKET

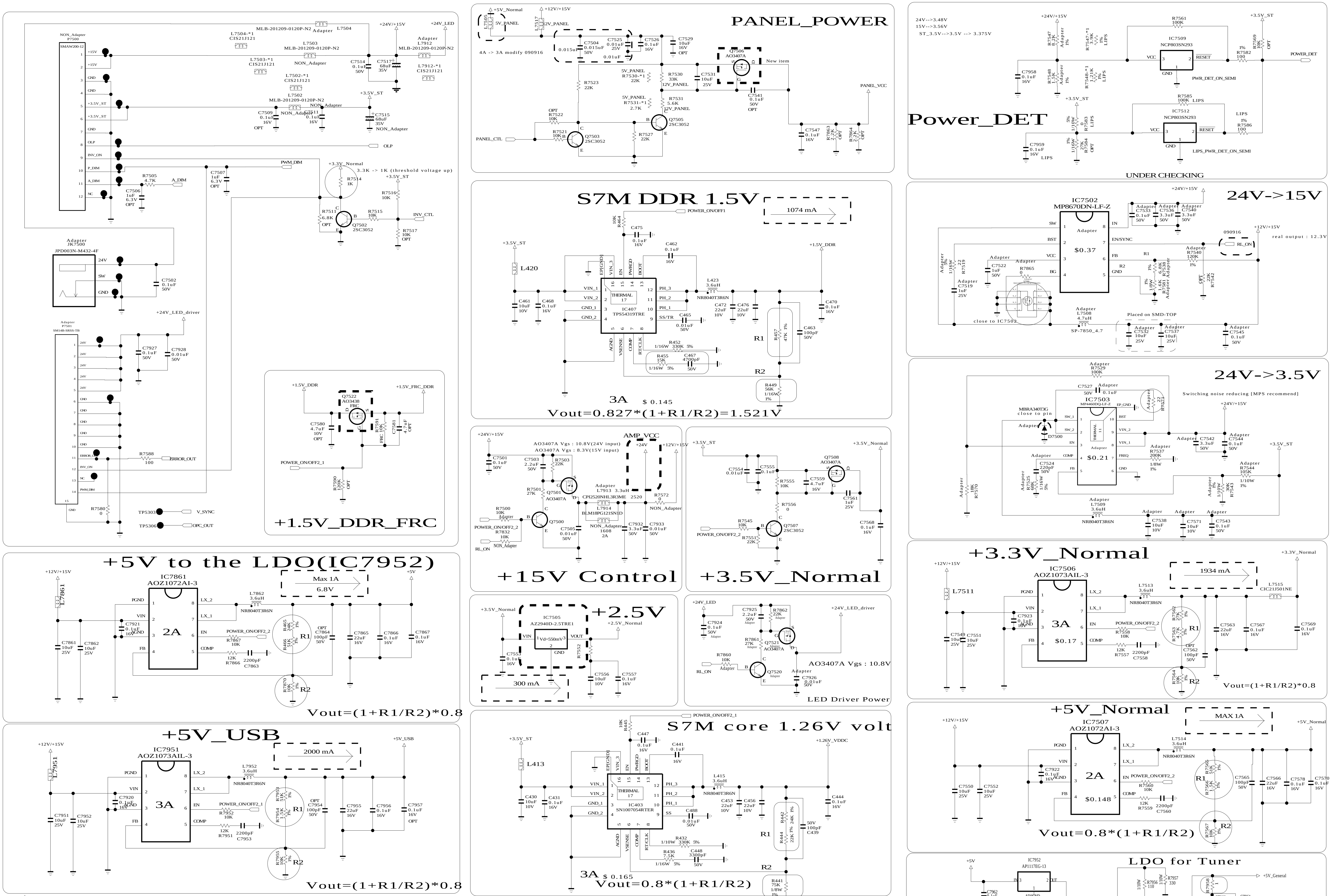


THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	SMD_GAS	SHEET	20 /



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

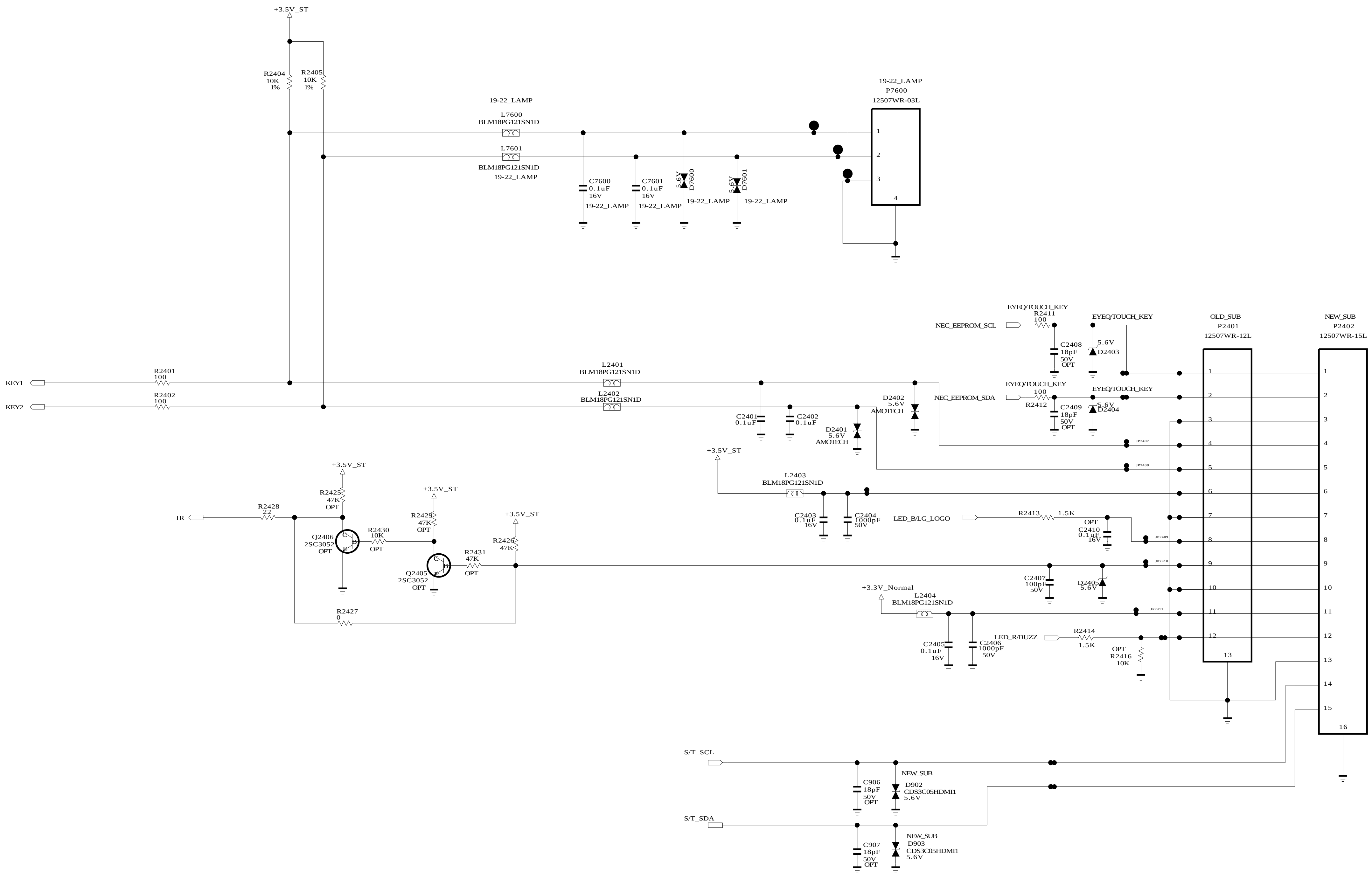
SECRET

LGElectronics

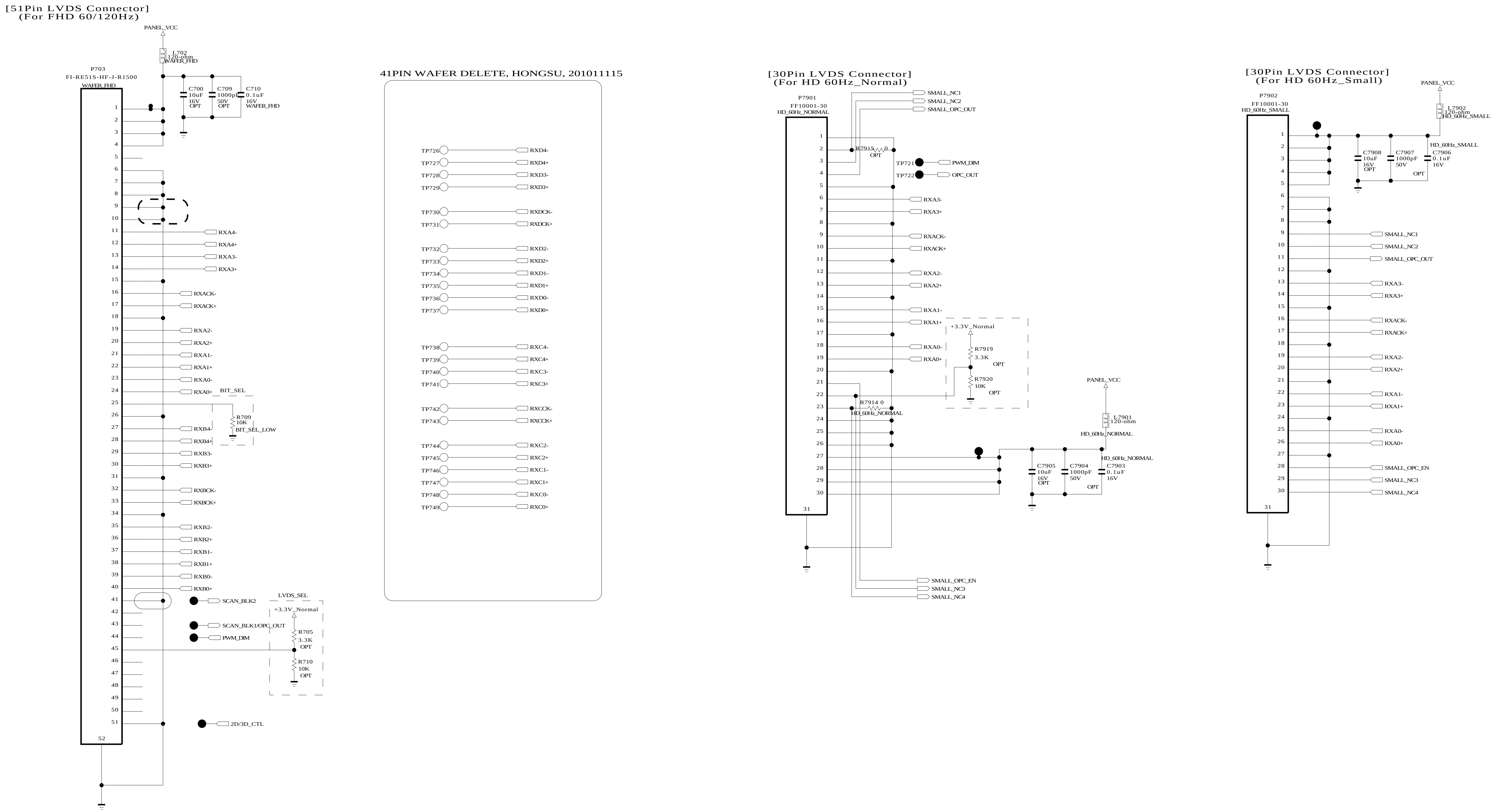
LG ELECTRONICS

MODEL	GP2R	DATE	20101117
BLOCK	POWER_SMALL	SHEET	22 /

CONTROL
IR & LED



MODEL	GP2R	DATE	20101023
BLOCK	IR/CONT_SMALL	SHEET	23



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

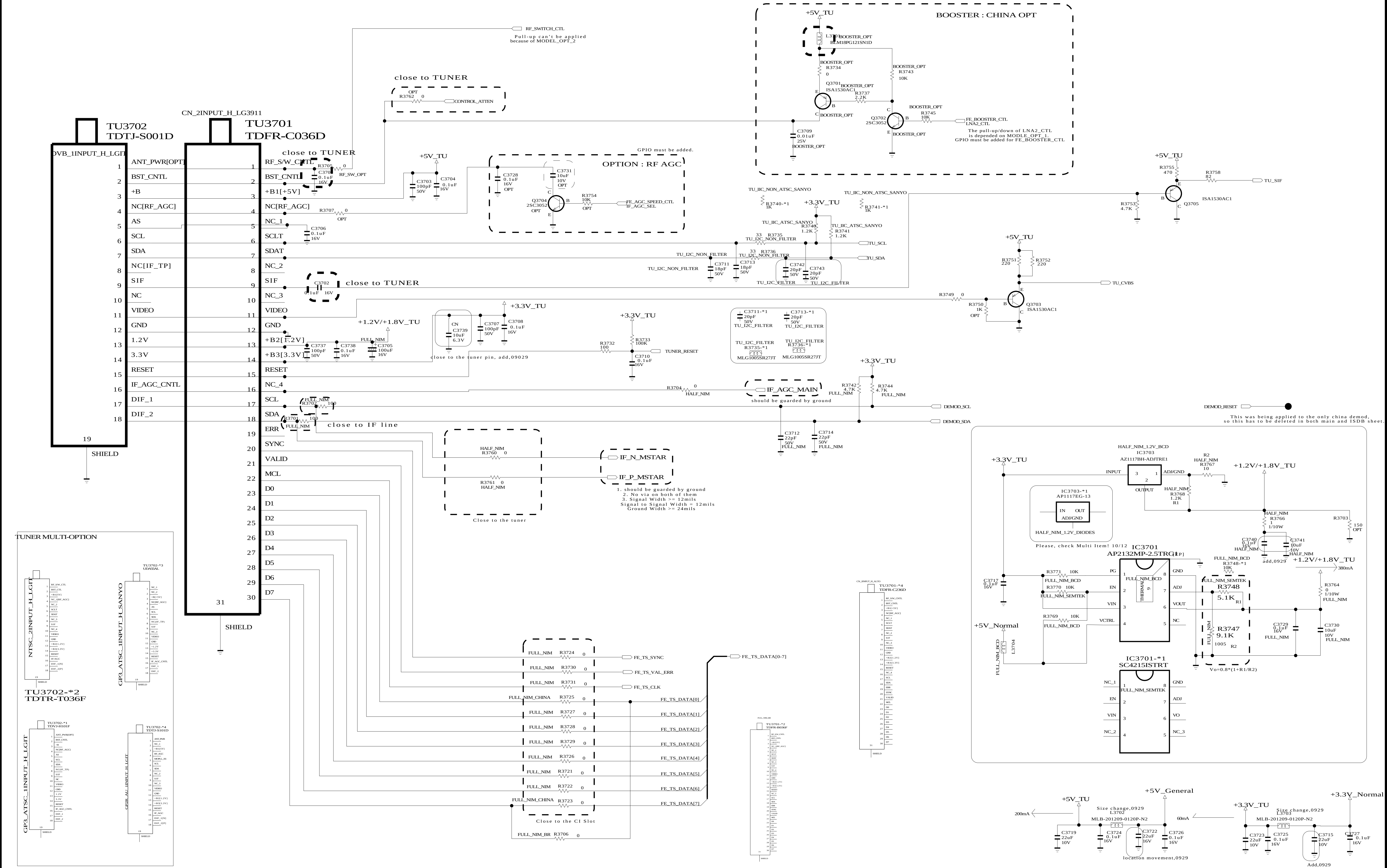
SECRET

LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101115
BLOCK	LVDS_SMALL	SHEET	24 /

GP2R_GLOBAL_TUNER_BLOCK for Small Model



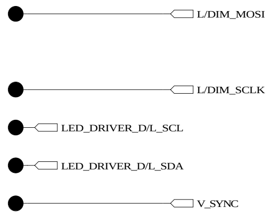
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET
LGElectronics

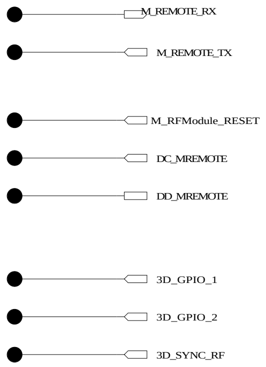
LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	TUNER_SMALL	SHEET	25 /

NON_L/DIM_LED/DRIVER



NON_3D_SG



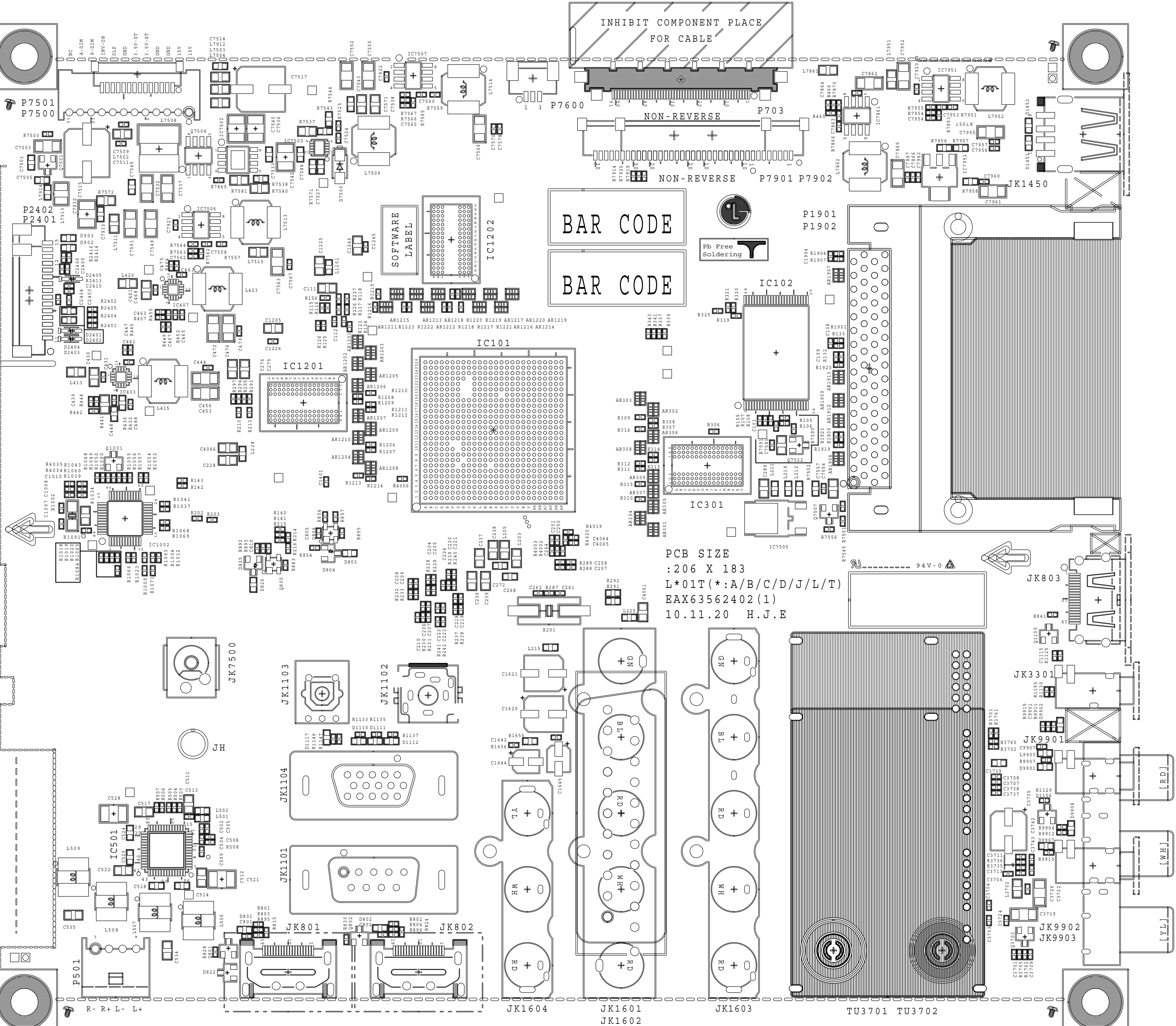
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

SECRET

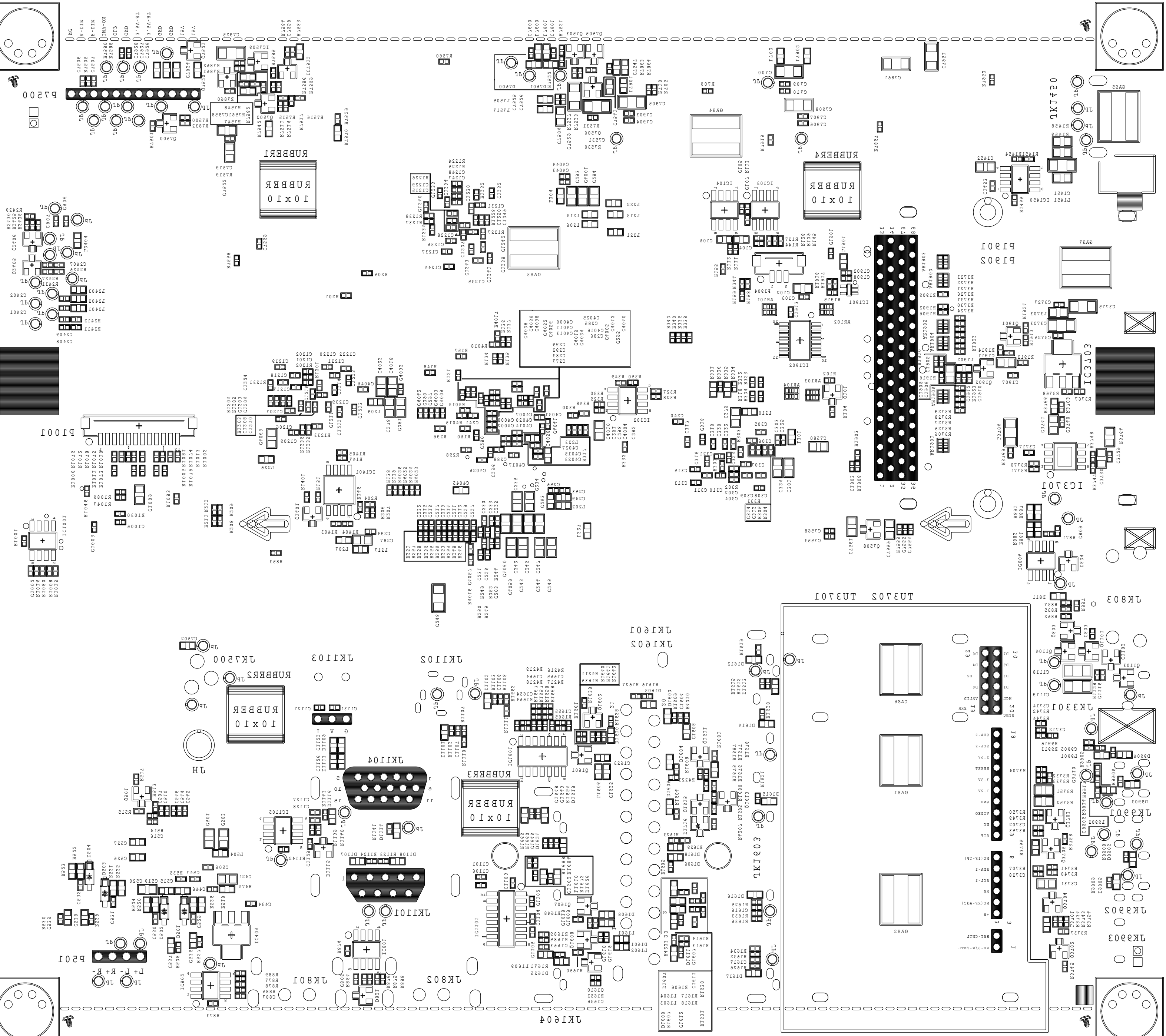
LGElectronics

LG ELECTRONICS

MODEL	GP2R	DATE	20101023
BLOCK	NON_L/DIM	SHEET	26 /

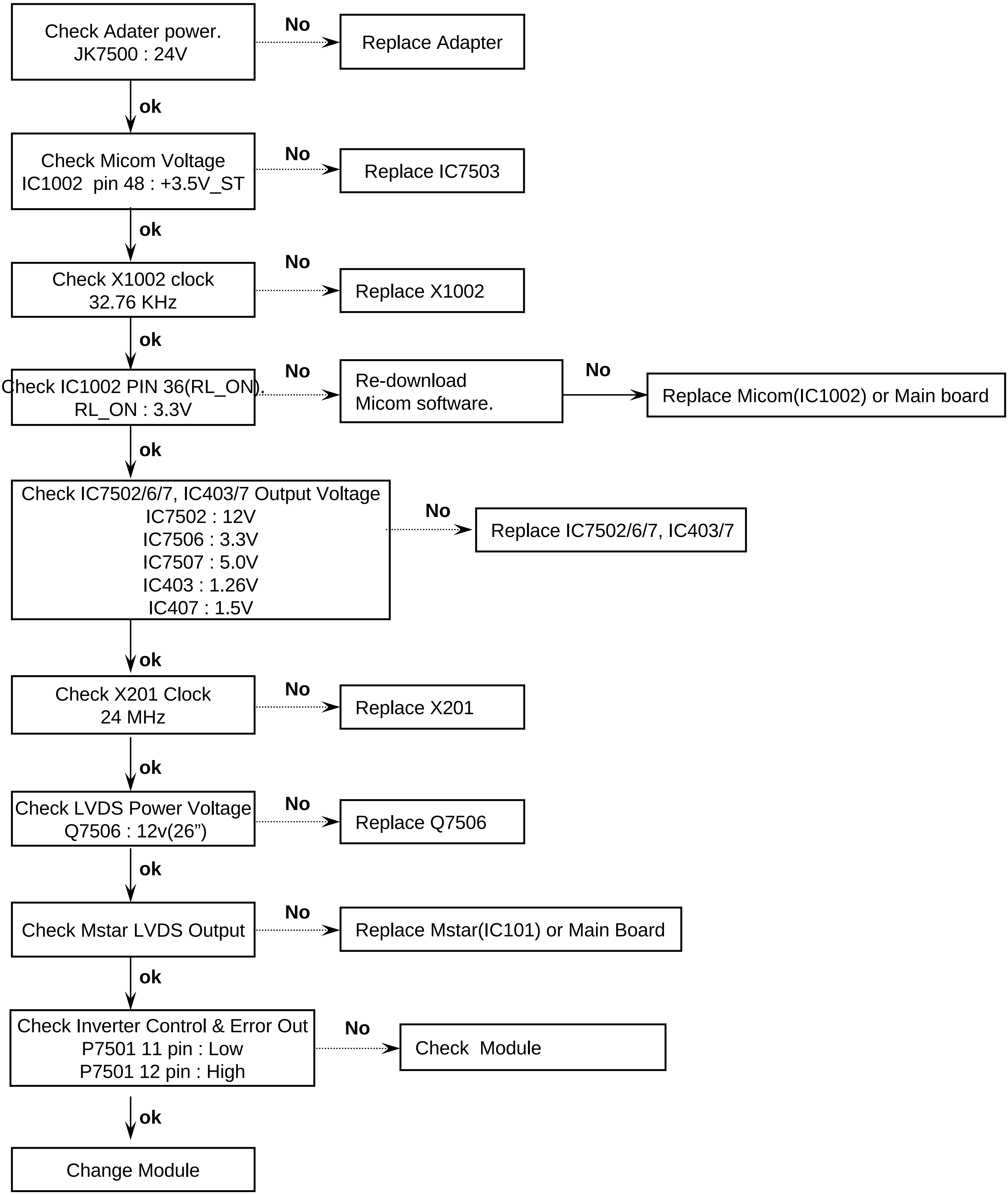


INHIBIT COMPONENT PLACE
FOR CABLE
P7501
P7500
P7600
P703
NON-REVERSE
NON-REVERSE
P7901 P7902
JK1450
P2402
P2401
SOFTWARE LABEL
IC1202
BAR CODE
BAR CODE
Pb Free Soldering
P1901
P1902
IC102
IC1201
IC101
IC301
PCB SIZE
:206 X 183
L*01T(*:A/B/C/D/J/L/T)
EAX63562402(1)
10.11.20 H.J.E
94V-0
JK803
JK7500
JK1103
JK1102
JH
JK3301
JK9901
JK1104
JK1101
IC501
JK801
JK802
P501
R- R+ L- L+
JK1604
JK1601
JK1602
JK1603
TU3701 TU3702
JK9902
JK9903
[RD]
[WH]
[YL]

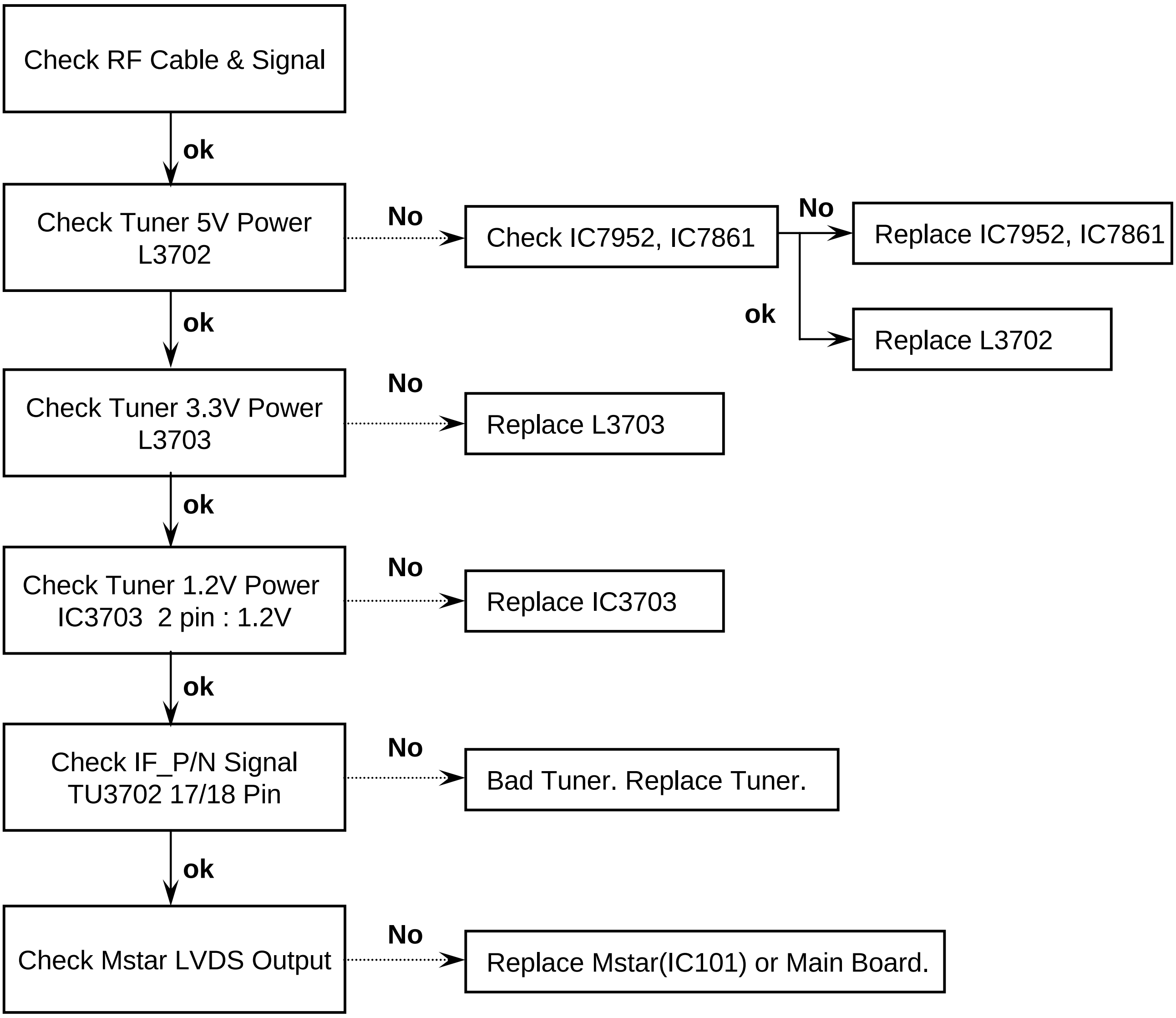


LG Electronics Inc.

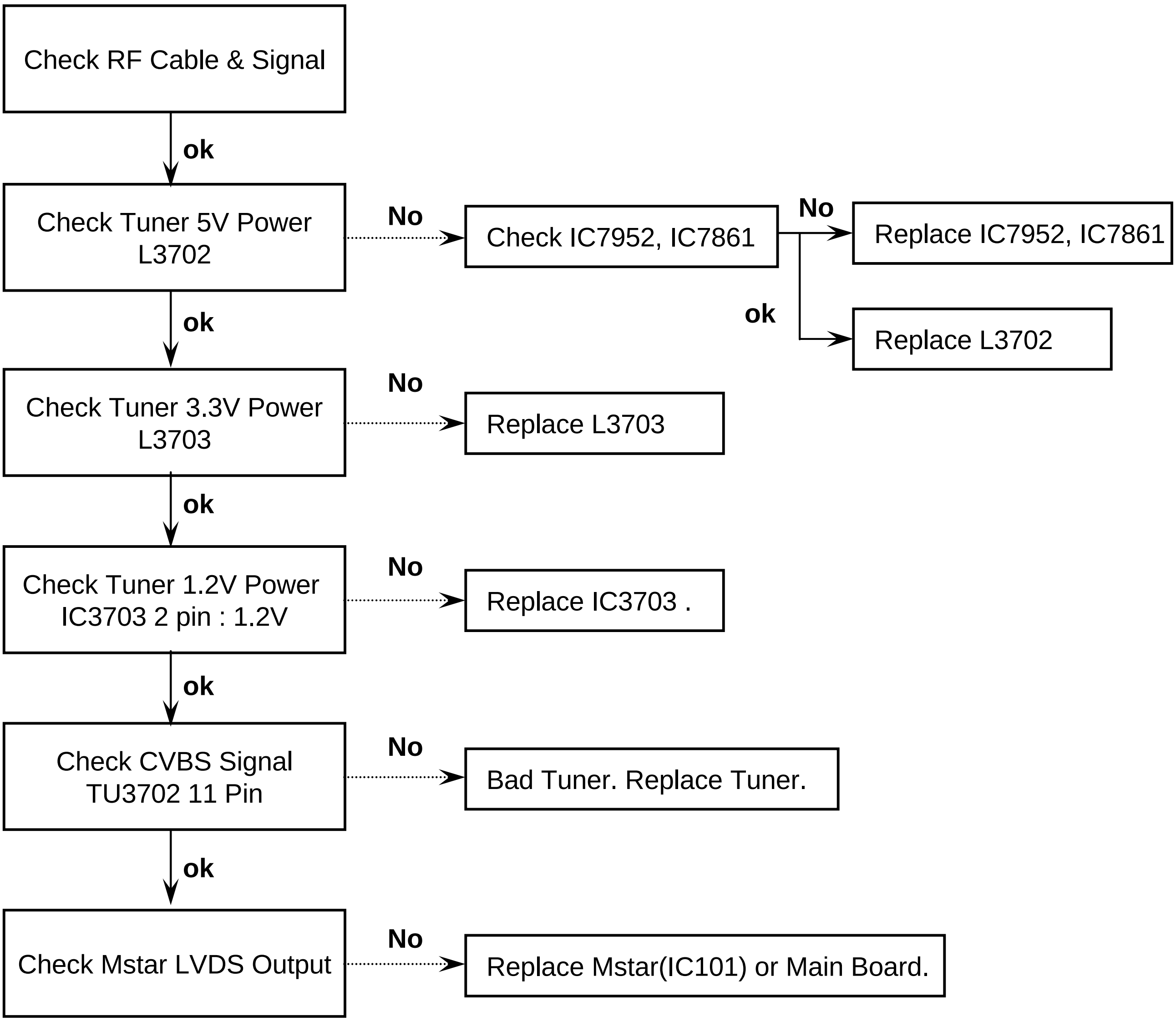
1. Power-up boot check



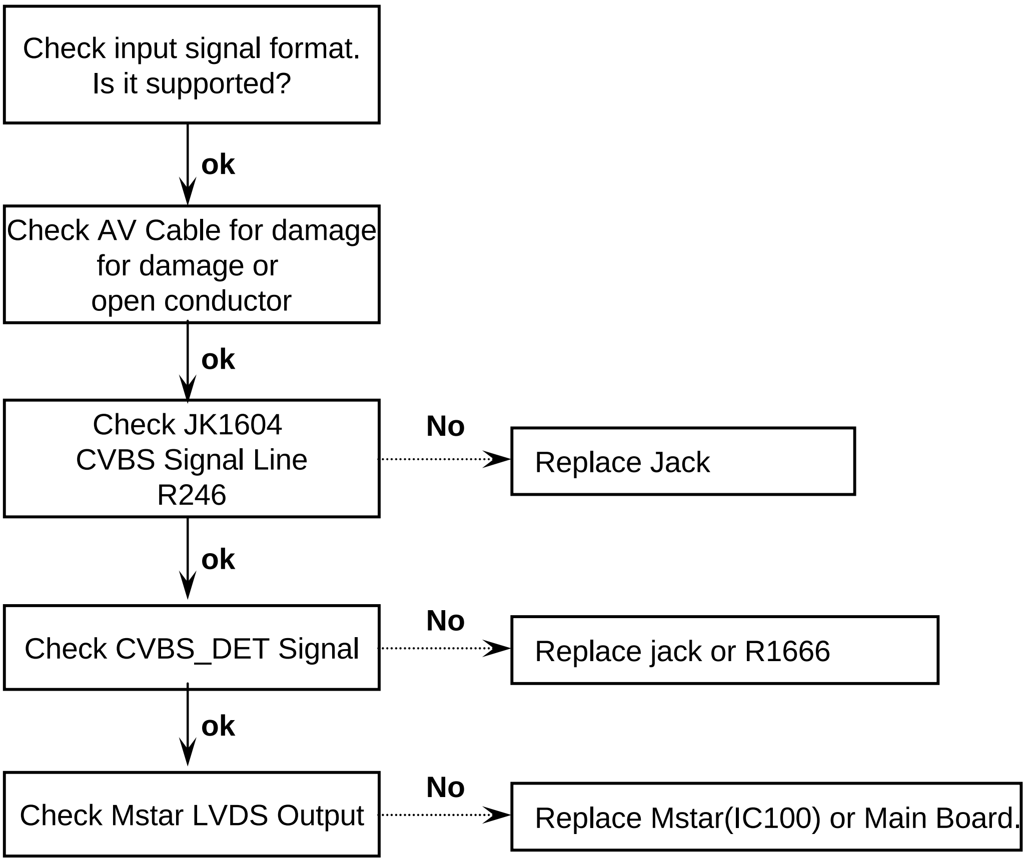
2. Digital TV Video



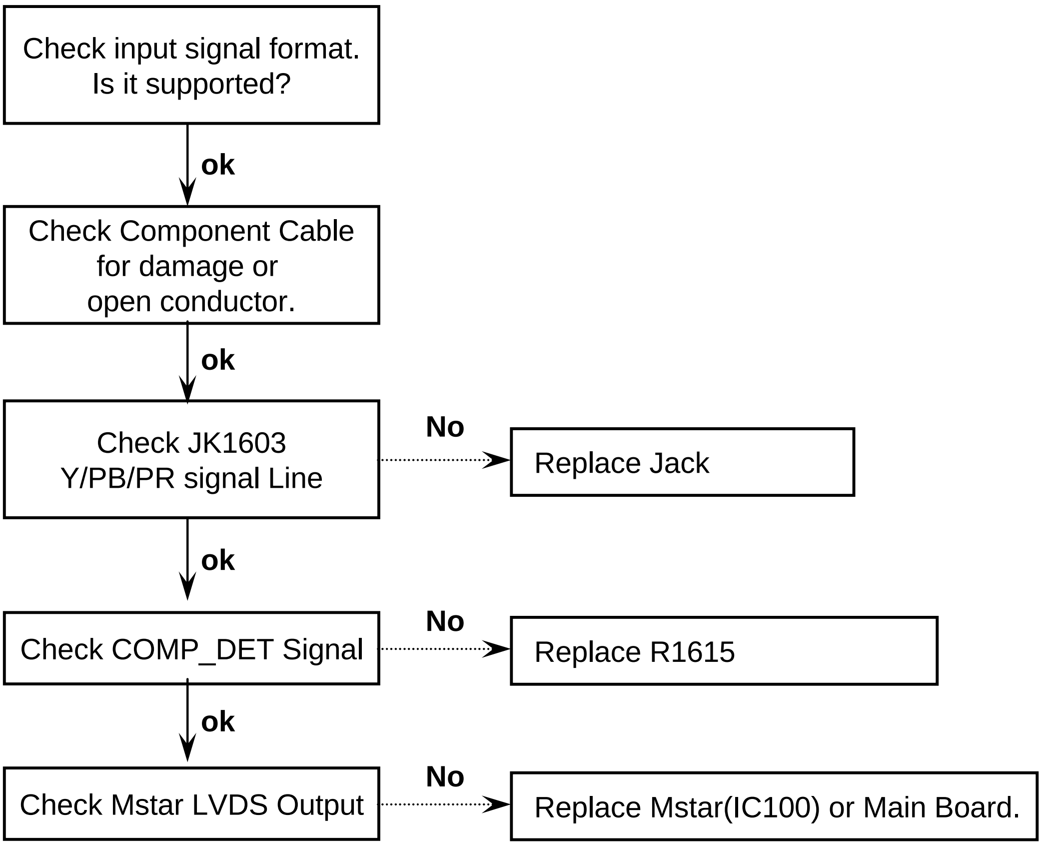
3. Analog TV Video



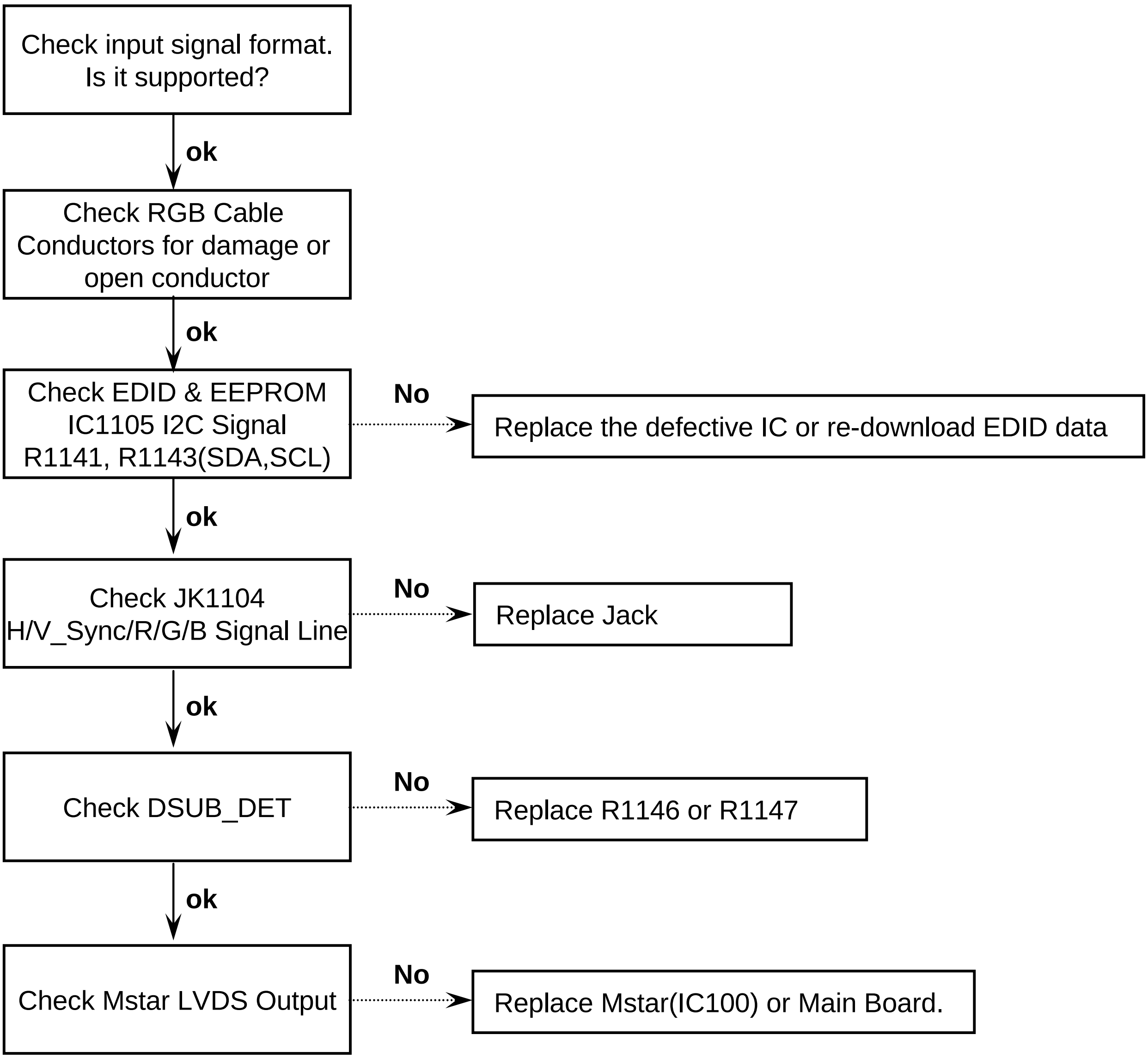
4. AV Video



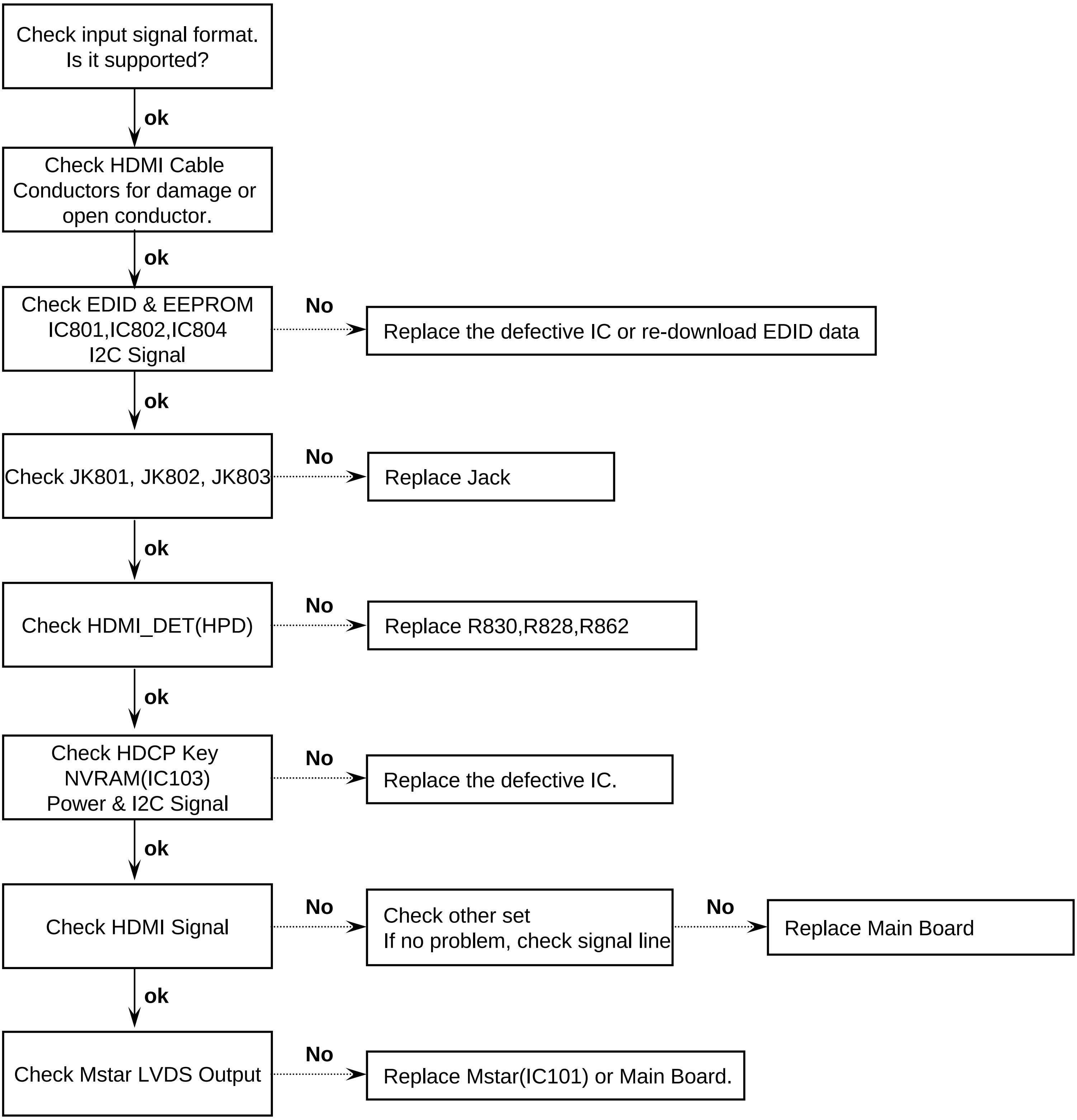
5. Component Video



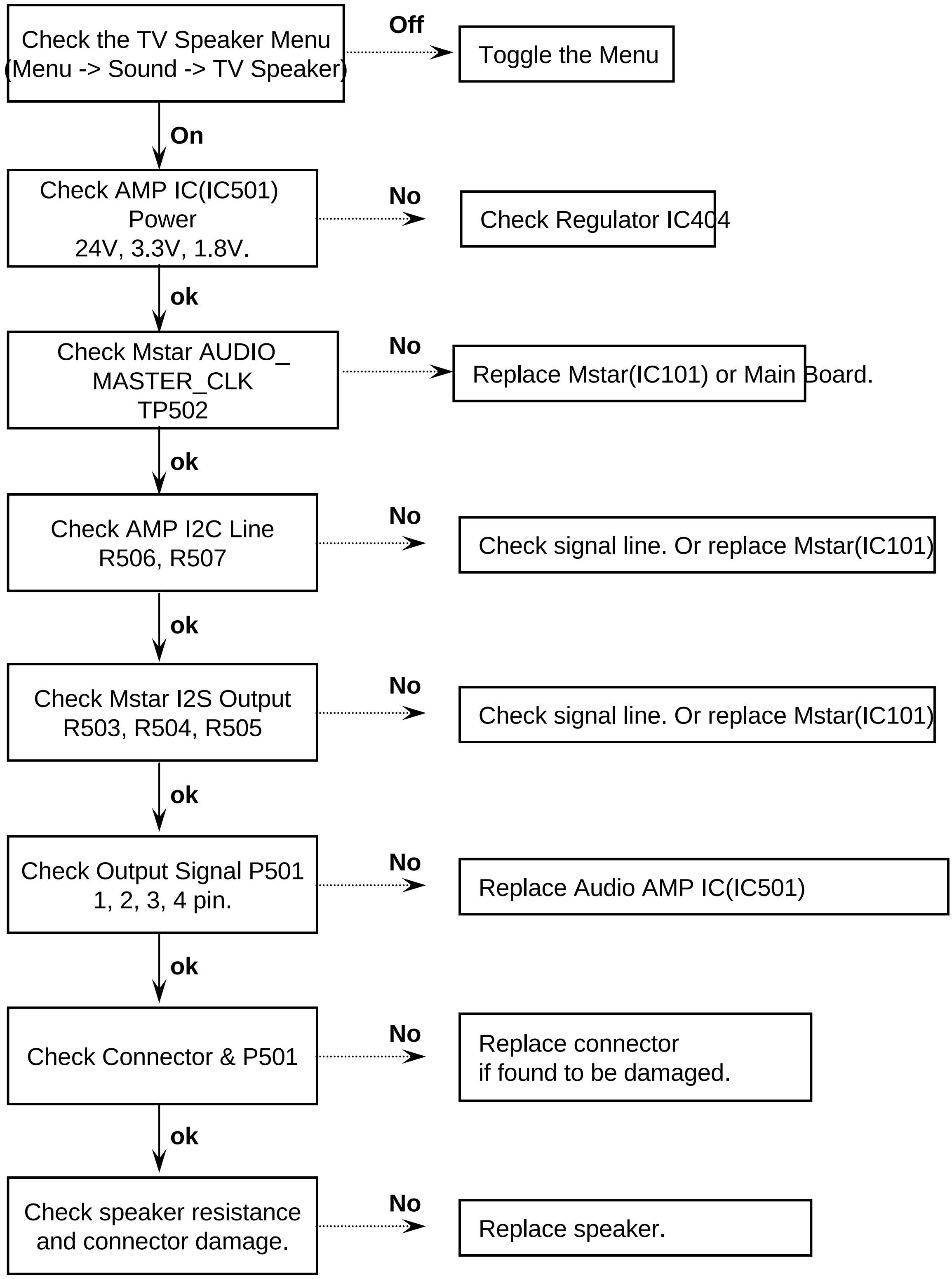
6. RGB Video


Check input signal format.
Is it supported?
ok
Check RGB Cable
Conductors for damage or
open conductor
ok
Check EDID & EEPROM
IC1105 I2C Signal
R1141, R1143(SDA,SCL)
No
Replace the defective IC or re-download EDID data
ok
Check JK1104
H/V_Sync/R/G/B Signal Line
No
Replace Jack
ok
Check DSUB_DET
No
Replace R1146 or R1147
ok
Check Mstar LVDS Output
No
Replace Mstar(IC100) or Main Board.

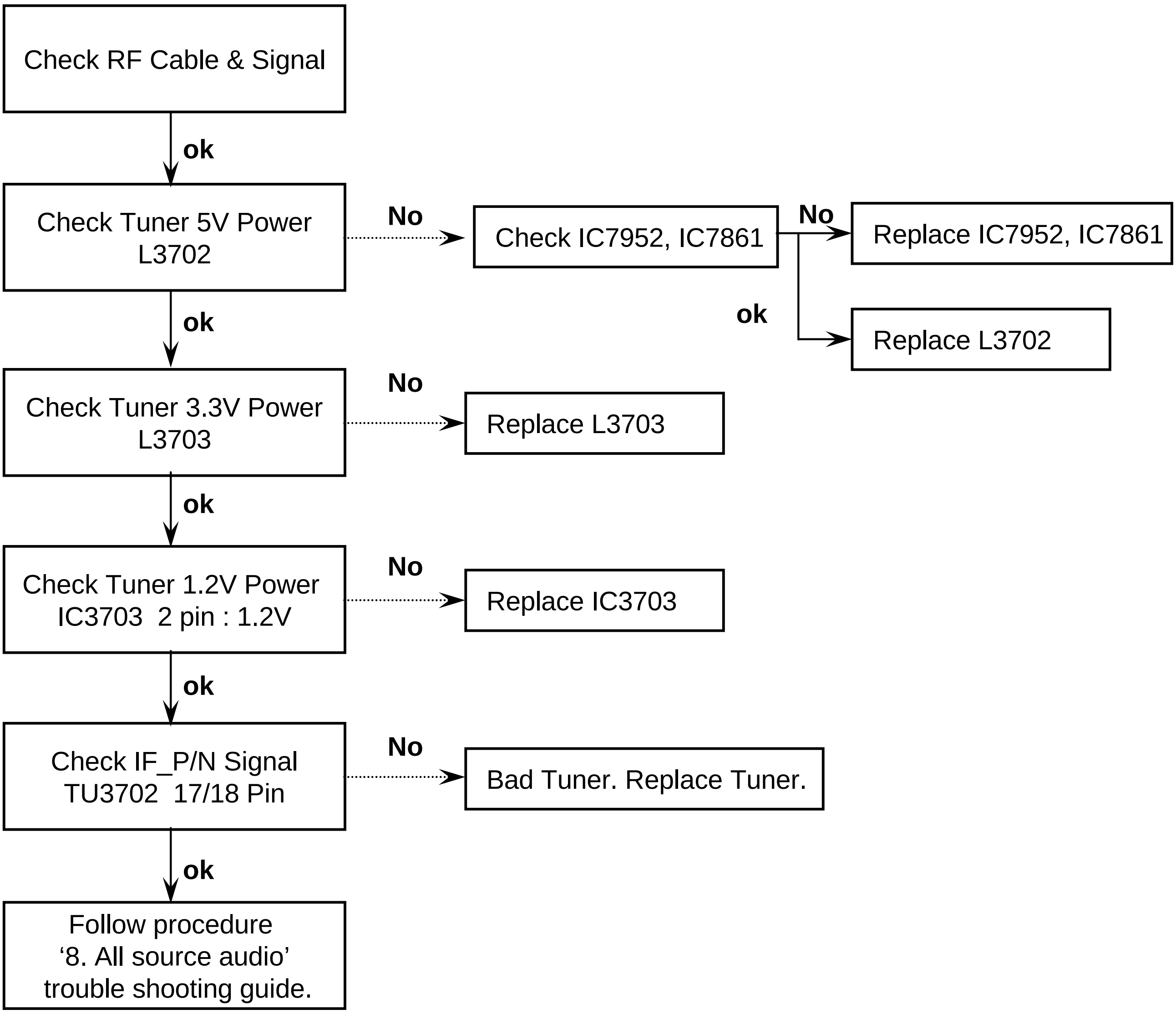
7. HDMI Video


Check input signal format.
Is it supported?
ok
Check HDMI Cable
Conductors for damage or
open conductor.
ok
Check EDID & EEPROM
IC801,IC802,IC804
I2C Signal
No
Replace the defective IC or re-download EDID data
ok
Check JK801, JK802, JK803
No
Replace Jack
ok
Check HDMI_DET(HPD)
No
Replace R830,R828,R862
ok
Check HDCP Key
NVRAM(IC103)
Power & I2C Signal
No
Replace the defective IC.
ok
Check HDMI Signal
No
Check other set
If no problem, check signal line
No
Replace Main Board
ok
Check Mstar LVDS Output
No
Replace Mstar(IC101) or Main Board.

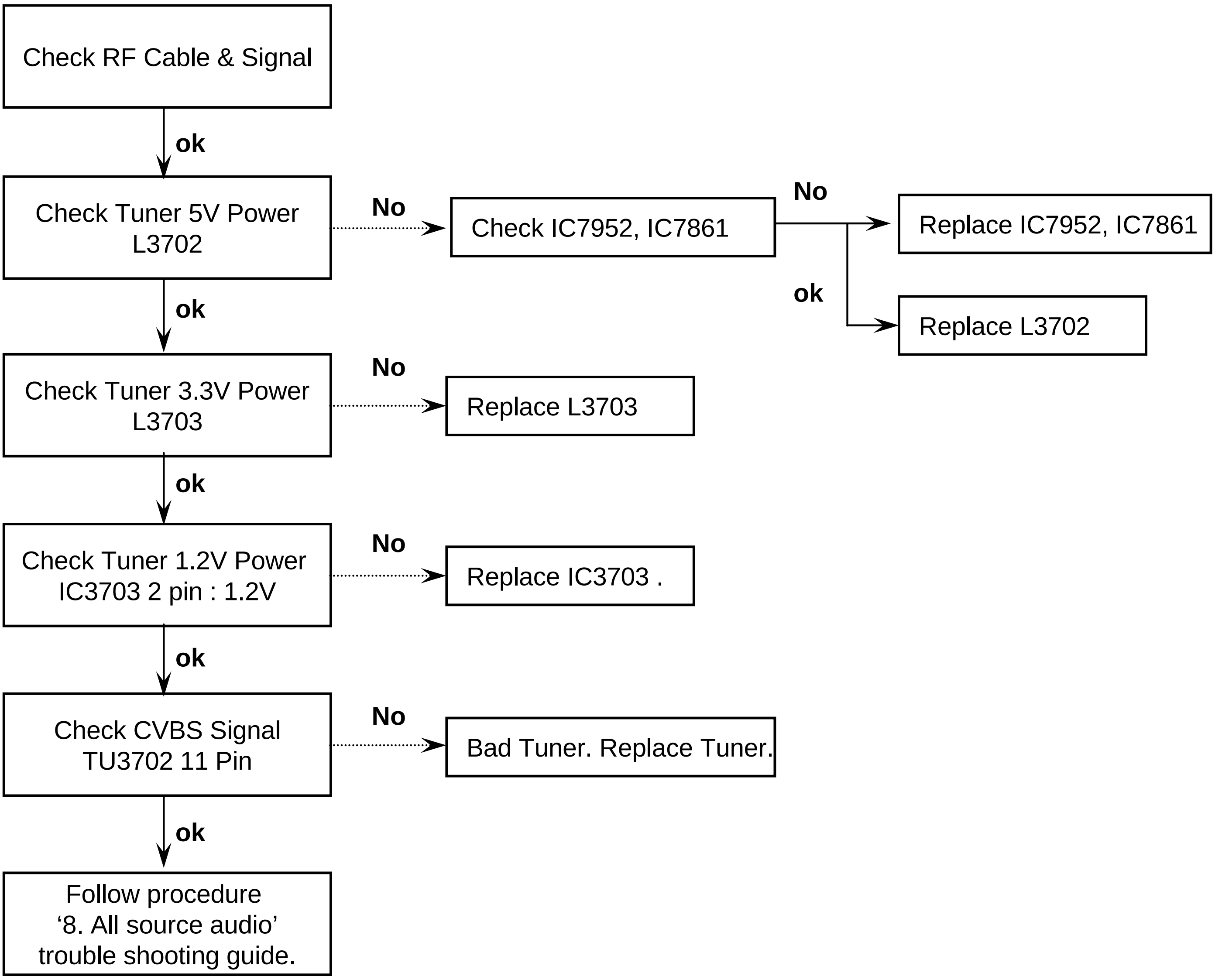
8. All Source Audio



9. Digital TV Audio



10. Analog TV Audio



11. AV Audio

Check AV Cable for damage for damage or open conductor

↓ ok

Check JK1604 & Signal Line → No → Replace Jack

↓ ok

Follow procedure '8. All source audio' trouble shooting guide.

12. Component Audio

Check Component Cable for damage or open conductor.

↓ ok

Check JK1603 & Signal Line → No → Replace Jack

↓ ok

Follow procedure '8. All source audio' trouble shooting guide.

13. RGB Audio

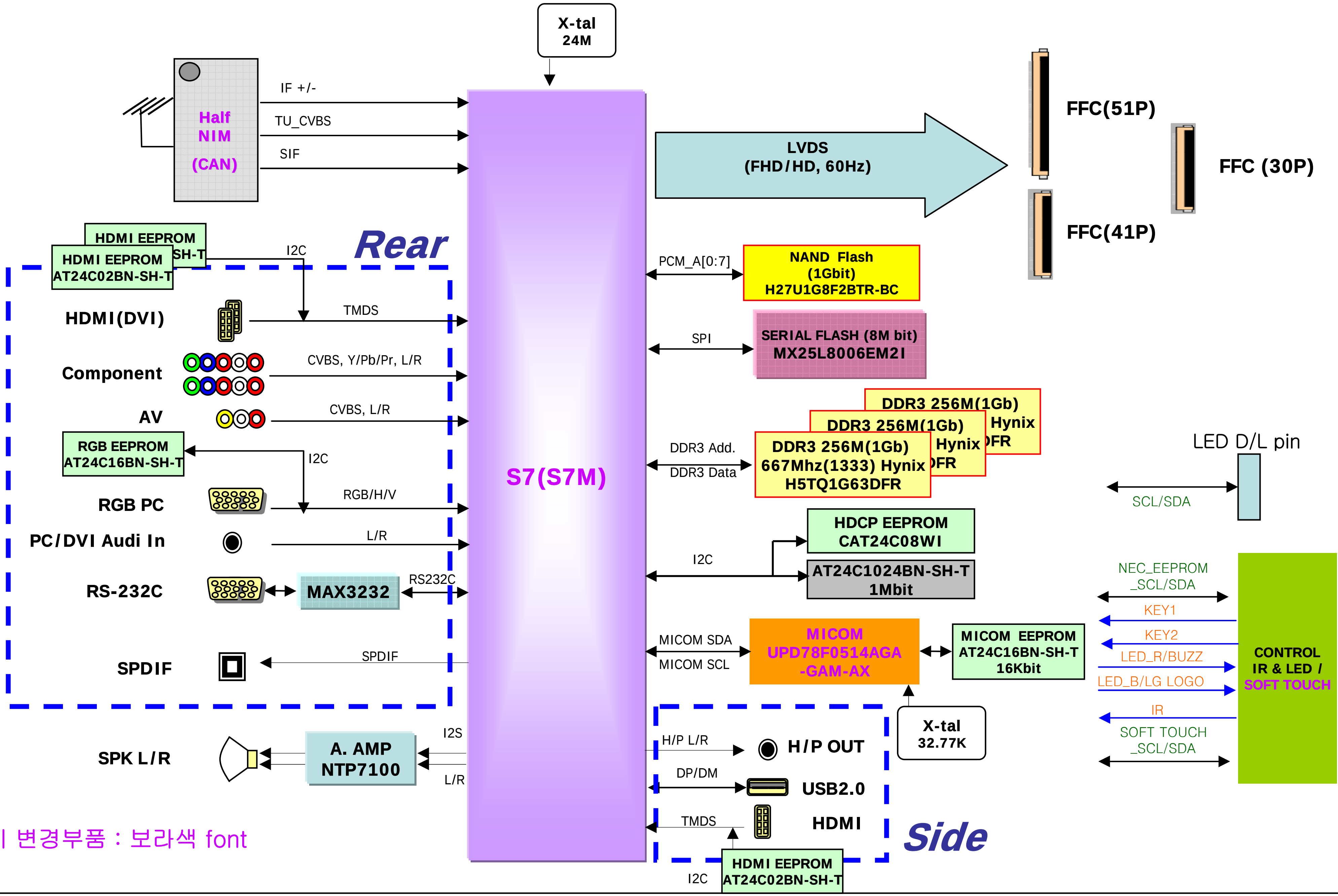
Check Cable conductors for damage or open conductor

↓ ok

Check JK1104 & Signal Line → No → Replace Jack

↓ ok

Follow procedure '8. All source audio' trouble shooting guide.



※ GP2 대비 변경부품 : 보라색 font